

# AMATEUR GARDENER IN THE HILLS,

BEING

## HINTS

TAKEN FROM VARIOUS WORKS BY AUTHORITIES ON GARDEN-MANAGEMENT, AND ADAPTED TO THE HILLS.

TO WHICH ARE ADDED

*all*  
A FEW HINTS ON FOWL, PIGEON, AND RABBIT KEEPING; AND VARIOUS RECIPES CONNECTED WITH THE ABOVE SUBJECTS, NOT COMMONLY FOUND IN RECEIPT BOOKS.

BY AN AMATEUR.

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*Will*

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"A garden is a constant source of amusement; a happy combination of work and play; a study and a recreation; a source of health both of body and mind."

"**FLOWER-GARDENS.**—Occasional visits to a garden are alike pleasant and profitable. We recommend them on high moral grounds, both as a relaxation and as a discipline. They are essential to the normal growth of humanity. Constituted as we are, we cannot do without flowers and flower-gardens. Life would show a partial and one-sided development without them, and lose half its poetry and sweetness. None interested in true spiritual culture could despise or neglect the heavenly wisdom they preach to the mind, the heavenly joy they afford to the heart, or the healing balsam they dispense to the wounds of the afflicted soul. Their sacred influence is indeed indispensable to the sanctifying and perfecting of our nature."

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"Yes, in the poor man's garden grow  
Far more than herbs and flowers;  
Kind thoughts, contentment, peace of mind,  
And joy for many hours."

*cali*

*175*

## PREFACE.

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THE contents of this little book were not originally intended for publication, but solely for the author's own information. At the solicitation of friends, however, he has been induced to publish them.

To gratify the author's fancy for gardening in a satisfactory manner, he had recourse to works of authority on the subject of his fancy, but the difficulties which he encountered in finding what he wanted, and remembering them so as to have them at hand when wanted, were so great, that he was obliged, "when found, to make a note of"—seeing that he often had to read through pages of matter before he got what he wanted most particularly at a particular moment.

The great objection to most works on gardening is, that they are too elaborate for amateurs, although not intended for them; they are, therefore, to an amateur, besides puzzling, very troublesome to "pick out such and such an act," and the object of the author has been to put together all the information he has collected in plain language without any "beating about the bush." Herein, he trusts, will be found the chief charm of this work; for what does an amateur care for long scientific names and the classes and families of plants and flowers, so long as he knows their English names and how to raise and treat them, so as to give him the satisfaction of having grown a favorite plant or flower in his little garden with a fair amount of success.

If the amateur aims at higher results than the scope of this work admits of, he will have no difficulty in obtaining the works which will give him all the information he wants.

The works from which the author has received the greatest assistance, and from which hints have been taken, are Beeton's "Garden Management," Thomson's "Flower Garden," Glenny's "Handbooks of Gardening," Pogson's "Indian Gardener," and DeLamer's "Pigeons and Rabbits,"—all of



which he recommends to his brother amateurs if they want any help not afforded by this brochure.

The author is sensible of the deficiencies of this little work, which is far from affording complete information even to amateurs; but this it does not pretend to do, it simply professes to treat of such things only as he has himself fancied, and to supply reliable data on which to work in the absence of personal experience; not to be a complete help to every body for every thing they might fancy: deficiencies must be supplied as occasion shall require, fancies dictate, or climatory influences necessitate.

The following notes are entered here to remind amateurs of points which they are perhaps too apt to lose sight of:—

1. "Beginners are very apt to imagine that their first efforts in plant culture will, of necessity, be successful; the contrary is generally the case. First attempts, in ninety-nine cases out of a hundred, are merely so much profit and loss; loss of plants, but knowledge gained of the necessary treatment. Gardening, like every other art, requires not only practice, but close observation; and those who have most failures are likely to become, provided they observe and note the causes of failure, the most skilful in the end. Many persons occupy themselves daily amongst a few choice plants, and, by the means indicated, have become proficient in the management of them, being amply rewarded for the pains taken by the new beauties successively unfolded by their plants."

2. Plants may grow by being simply planted out, but to grow in a way to satisfy the grower's hopes and expectations is a different matter. A rose tree may grow and bloom if planted out, but to bloom properly it must be cultivated by the aid of proper composts, watering, pruning, &c. On the other hand,

3. "Nature is governed by certain laws, and obedience to these laws is essential, even in the culture of a geranium. Generally, plants are treated too artificially; instead of simply supplying the material for nature to work upon, her efforts are frustrated or counteracted by supplies too great or too small, or of an unsuitable kind."

4. The difference in climate and altitudes will prove a fruitful source of failures, but these notes can easily be cor-

rected to suit particular localities by noting the times at which wild plants and trees break into leaf and flower. The months mentioned herein in which to carry out certain operations are approximate only, note the seasons, and draw your conclusions therefrom.

5. There is no use in laying down hard and fast rules for garden operations, note general principles, which a very little experience will enable you to apply.

6. Make notes, and correct your book accordingly in whatever particular you are satisfied that local influences necessitate it.





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# THE AMATEUR GARDENER IN THE HILLS.



## Plants.

Plants, like all other things, perform certain functions, the chief of which are the absorption of moisture and nutriment by the aid of both their roots and the under part of their leaves, which absorb the moisture exhaled from the earth; and the transpiration and exhalation of superfluous or useless gases or moisture from the upper part of their leaves; this transpiration is greater in proportion as the atmosphere is dry and hot; and lesser, sometimes not at all, at night and in moist weather. If the transpiration is greater than the absorption, the plant will droop, which is a sign that either a little shade or more moisture is required.

If a plant is plunged in water, it will be noticed that a number of bubbles will rise to the surface. These are formed of very pure air, almost entirely oxygen gas. On the contrary, if the experiment is tried in the dark, the expired gas will be carbonic acid gas and nitrogen, but no oxygen.

Rain or water sinks into the earth, carrying with it all soluble matters, which, being absorbed by the roots, form the sap of the tree; when it arrives at the surface of the leaves, the watery parts combine with the carbonic acid of the air, through the influence of light, and appropriating the carbon give out the oxygen; this is the respiration of plants. The carbon thus obtained combines with the elements of the water absorbed, and forms the solid green matter called "chlorophyll" and other peculiar juices, sugar, gum, &c. It must, however, be particularly noticed, that this green colour of the leaves and stems has a greater influence in giving out oxygen than the rays of light. Chlorophyll is produced by the exposure of the plant to light, for no plant grown in the dark will be green, but will become so only when light is admitted.

The effects of light and heat, in favouring vegetation, are always found in union. Causes which are really due to light, are often attributed to heat, and where both are combined, there will be the greatest power of vegetable growth; but the absence of light and

air, on the other hand, often causes the upward growth of plants to seek them, *i. e.*, in dense forests and similar situations. The influence of light is chiefly on the leaves, that of heat on the roots, which thereby become more fully developed. Plants should, therefore, never be shaded from the sun when they can bear its full power.

Plants exposed to the sun absorb large quantities of carbonic acid from the surrounding atmosphere, which is decomposed in their interior structure, and exhale the oxygen; the roots, bark, flowers, and fruit invariably exhale carbonic acid gas, but never oxygen; while a dying or languishing plant always gives out nitrogen.

Vegetable life is sustained by certain substances—water, carbonic acid, and ammonia. These are formed of combined elements,—water of oxygen and hydrogen, carbonic acid of oxygen and carbon, and ammonia of hydrogen and nitrogen. All these exist in the air, and supply the vegetable tribe with food. And vegetables again not only supply food for men and animals, but likewise that which is essential for their respiration; for, besides separating all noxious excess of carbonic acid from the air, they are inexhaustible sources of oxygen, the element essential to respiration, and consequently to animal life. This supply of oxygen by plants compensates for that consumed in respiration by men and animals, and thereby maintains the atmosphere in a state proper to be breathed. The respiration of plants is exactly the reverse of that in animals—in the one the carbonic acid is absorbed and oxygen given out, and in the other the oxygen is absorbed and carbonic acid given out, thereby maintaining an equal balance between the two. “A forest of trees would be just as well nourished if there were no animals, but animals would shortly cease to exist if there were no vegetables.”

From the above it will be readily seen that the popular notion, that the presence of green vegetation is injurious, is a fallacy. It is, on the contrary, quite otherwise, by reason of the large quantities of oxygen in a pure state which is given out by it; and, therefore, also, the more vegetation there is, the better. It is the presence of flowers and fruit, particularly the *decaying* ones, and *dead, decaying*, and *putrefying* vegetation, which is injurious, *always* exhaling, as they do, carbonic acid or nitrogen gas.

It is easy, therefore, to see too that the popular idea that the presence of plants in a room is injurious, is also fallacious; it is the exhalations of *stale flowers* which are so; and an American Doctor recommends a room full of plants as the most complete “*health resort*,” free from the inconveniences of travelling and the anxieties of a separation from home. “Its benefits are marked and numerous: in nervous disorders, such as melancholia and chlorosis, in diseases of the mind proper and other allied conditions, grief, ennui, &c., nothing is more efficient than studying and caring for plants. As therapeutic agents and in prolonging life and ameliorat-







ing the symptoms of phthisis, the greatest success is expected from plants. Select plants for rooms those which have soft, thick leaves, and extensive leaf surface; but highly scented ones should be avoided, as they often give rise to headaches."

The mode of recovering frozen plants, or removing snow and ice from plants, is one of the most difficult duties devolving upon a gardener. It is not the covering of snow or ice that is fatal to growing and living nature; it is the frequent application of a small quantity of frozen moisture (frost) and the sudden evaporation of it when thawed. The thawing is the injurious part of the process: when water freezes, that portion of the action of heat which kept it in a fluid state is set free; its thawing, on the contrary, absorbs a large quantity of heat, which is greater in proportion as it is more rapid: were this not the case, the encasing of vegetables in ice would rather be a protection to them. The great difficulty is in removing ice and snow from a plant which stands in the open air without injuring it; immersing it in cold water would do this, and the colder the water is the better would the operation succeed. The roots and stems of those in the ground are soaked in snow water till it is warmed and evaporated by the heat of the sun, which is the grand means of their preservation; for if the sun were to beat fully upon them when naked and exposed, they would be speedily destroyed, as we find to be the case on a bright hot sunny day succeeding a frosty night. If the hands have been exposed to the cold till benumbed, and then brought near a fire, the sensation is painful; and if the cold has rendered them insensible, such a means of recovery is fatal; the fluids in the small bloodvessels suddenly expand and burst them, the capillaries are disrupted, the circulation cannot be carried on, and they die or undergo mortification. If, however, they are plunged into very cold water or rubbed with snow, they not only recover their tone with safety, but in a pleasurable manner.

This principle applies to both animal and vegetable provisions frozen accidentally or otherwise. If they are put into hot water and boiled, they become tasteless by the bursting of the small vessels and the escape of those fluids upon which their flavour depends; if, however, they are immersed and thawed in cold water first, they are as fresh and savoury after being dressed as if they had never been frozen.

Plants in a dormant state are endowed with a wonderful power of resisting cold, but nothing is so injurious as sudden exposures to heavy rain or frost, and fierce hot sunshine.

### **Planting and Transplanting.**

Hardy annuals should be pricked out or transplanted often, as such checks ensure hardiness of constitution and profusion of bloom. Where they are to be put in patches, resort may be had to our friend

the flower-pot (see Seeds). The best time for removals is just before they start into growth,—i.e., when they have grown a few small leaves and are large enough to handle.

Now raise the plants with a table fork or wooden spathe; carefully separate the half dozen which will come up together, by pressing the soil sideways, so that the fibres may not break; make holes with a dibble, only large enough to take in the roots; put them in, and hold the plant not deeper than they were in their seed-bed; and make another hole alongside, an inch or half an inch off, and squeeze the soil towards the plant; thus leave them and water with a fine rose, filling holes and all.

In removing deciduous plants, the roots should be as little exposed as possible to dry or cutting winds, frosty air, or hot sun; and in planting they should be put in at their old level. Examine the roots to ascertain probable quantity lost by removal, and in proportion reduce the head to compensate for that loss. In planting, spread out the roots, work the tree up and down to allow of the soil getting well in among the fibres and rootlets, tread the soil well down, and give two or three good soakings with water to settle the whole: when the rains have fairly set in, removals may be made with the least amount of risk, as the evaporation from their leaves, owing to the humidity of the atmosphere, is reduced to a minimum.

To revive plants which are flagging from exposure of their roots, or by transplanting from dry soil, the roots should be dipped, before replanting, in a mixture formed of equal parts of cowdung and fine rich soil, with water enough to reduce the whole to the consistency of custard. It will adhere to the rootlets, to which again will the soil adhere on contact, the roots will at once begin to swell and derive nutriment, and the formation of rootlets will be promoted.

If you have occasion to transplant in dry weather in Summer, do so only in the evening after sunset; plant and water immediately, and be careful in removing the plant, that the rootlets or shoots are not broken, or they will "bleed" to death perhaps.

### Pots and Potting.

The smallest pots are called "thimbles," or "thumb-pots." "Sixties" are three inches deep and the same in diameter at the top.

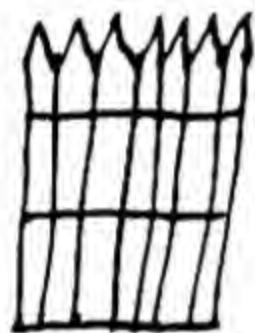
"Forty-eights"	...	..	...	4 inches.
"Thirty-twos"	...	...	...	5 "
"Twenty-fours"	...	...	...	6 "
"Sixteens"	...	...	..	7 "
"Twelves"	...	..	...	8 "
"Eights"	...	..	..	9 "
"Sixes"	...	...	...	10 "
"Fours"	...	..	...	11 "
"Twos"	...	...	...	12 "



## - Decorating -

### Creeping & Climbing plants -

1. A single bamboo is fixed in the ground with 2 strong pieces of wood on its summit fastened horizontally, & crossing at right angles.
2. A single pole crossing at summit with short cross bars. Strings should be fastened to the cross bars & stretched to pegs fastened in the ground in a circle at some distance from the base of the pole the creepers being placed just outside this circle & trained up the strings.
2. 4 bamboos sunk in the ground & united firmly by bars above & below, as well as by bars crossing diagonally.
3. Wire frames.







For potting, only slightly moist, almost dry, pulverized soil should be used, so that the roots may be covered with the soil as they hang, and to prevent cramping.

Pruning and re-potting should not be done at the same time; the former should be done first, as a rule, and the plants allowed to make half an inch or so of fresh growth ere they are disturbed.

A good way to re-pot large plants is to tear off two or three pieces of turf, place them in the pot, on them place the plant and ball of earth, round which put in more turves and well-rotted manure; fill up the interstices with prepared compost, shake well, and water two or three times to settle. They should then be kept warm and moist for a few days.

The principal points to be attended to in potting are,—proper drainage, proper compost, careful watering, proper top management, and generally the roots should be *spread out*, not rolled up and put in anyhow.

Without the first mentioned, no plant will grow properly; they may live, but they will not grow where the water gets stagnant and the soil sodden and sour, both of which results will follow, if the drainage is not efficient. Look well, therefore, to your drainage as the first and most important operation in potting. It is best provided by placing over the hole in the pot crocks or potsherds, which can be laid more evenly, to the depth of an inch or two. Charcoal is also excellent for this purpose, and may be laid in, first placing a single crock over the hole; charcoal grit at the bottom of a pot will keep out worms.

“Further, if we want a plant to grow fast, it must have plenty of room; if to check or retard it, it must be kept potbound.”

### Beds and Borders

Should always be three or four inches lower than the walks, so as to admit of rainwater running off the paths and sinking into them.

*December.*—All the beds should be trenched up, and well manured. This should be done annually, if plants are wanted to grow to perfection.

The collars of bedding plants should always be protected from snow with long litter.

*April.*—All plants should be planted out now at the latest, and should be in a position to start into bloom.

Let the bed or border be freshly and well dug, then carefully tread every inch of it, and rake perfectly even. The necessity of making the soil hard and close is, because the rootlets of small plants are very fine, and if the soil is loose and the fibres are exposed to dry air in rough soil, they will perish; but when the soil

is close, they derive nourishment from the present fibres without having to make fresh ones.

*Mulching* consists in spreading a layer of stable manure over the roots of trees or plants, &c. It prevents evaporation in hot and bright weather, and keeps out frost in winter.

An old umbrella, or similar frame-work, covered with cloth or paper, affords excellent protection against frost or hot sun, for small trees and plants.

### Soils.

The sweeter the soil is,—i. e., the oftener it has been turned and exposed to the air,—the better it is. The best is a friable loam; and if there is a couple of feet deep of it, nothing more than dressing is required.

All vegetable refuse should be collected and stacked for future use; when well rotted, it forms one of the best soils for plants. Leaf-mould, or the rich black soil of oak and pine forests, is the best; but "it is not the *upper six* inches, but the *lower twelve* that is so valuable." It should be sifted before being used.

*Light soil* is such as would be made with a barrowful or other measure of good loam, half ditto well decomposed stable manure, and half ditto of leaf-mould, and a little sand.

*Heavy ditto*—A barrowful of stiff loam, one ditto mixed mould and manure, and half ditto leaf mould.

One-sixth of a barrow of burnt earth added to either will further enrich it.

The coarser, in moderation, the soil is, the better will the plants thrive; sifted soil is apt to become too close and caked, owing to which plants often fade and die off without any apparent cause; natural soil, with its proper proportion of stones, leaves, rubbish, &c., is the best; hand-picking would be enough for small quantities, if the whole heap is gone regularly through to pick out all that is likely to be inconvenient in small pots, stones, sticks, worms, grubs; no stones which are not large enough to pick out should be removed, certainly nothing smaller than marbles: nothing will flower so well in a finely-sifted soil as in a moderately coarse one; the proper soil is one through which water will run gradually, thoroughly wetting it. Sifting may be necessary to get rapidly through a large heap of soil, in which case a large mesh should be used.

### Manures.

"Dirt is only wealth out of its place: put it in its right place, and it will produce fertility."

Refuse of *all* kinds,—grass, weeds, leaves, dung,—and in fact *everything*, should be collected and laid in heaps or pits, in alternate layers, nine inches thick with four inches of soil. These, when well



ii-cake (Khurree). in powder, is an  
admirable manure for Roses.

One lb of guano to 20 gallons of water  
forms the best species of liquid  
manure for pot culture. for the  
border double that quantity.

### Compost.

4	mannds	of Kuller, well pounded
1	"	Daks, sifted.
$\frac{1}{2}$	"	Quicklime, sifted.
8	"	Cow-dung.



rotted into mould, are highly useful, and make the best manure. "Everything added to the dunghill is so much productive power secured for the garden." "Leaves are Nature's means of restoring fertility to the soil, and if they are removed without applying a substitute, the soil becomes rapidly impoverished."

"The next great and prolific source of ammonia to a dead horse is the drainage of stables and cowhouses. The produce of one cow or horse in one winter, collected daily and mixed with leaf-mould, is sufficient to manure half an acre of land, whereas its solid produce would manure but one-fourth of an acre."

If the abovementioned heaps are saturated with the drainage of stables, it will be still further enriched, and the more highly the cow or horse has been fed, the richer will be the manure; horse manure, however, restores to the soil the greatest variety of fertilizing properties.

If strong manure is used for top dressings, and its sight and smell are disagreeable, a little powdered charcoal sprinkled over it, and covered with an inch of light mould, will at once absorb any unpleasant odours.

"*Charcoal* has the power of absorbing extra moisture and ammoniacal and carbonic acid gases, and not only prevents their doing mischief, but retains them till wanted by the plant. It forms for this purpose not only an excellent drainage for plants, but should also be scattered in lumps throughout the soil. Its effects on sickly vines and in brightening up a flower-bed are specially worthy of notice as well as a trial."

*Bone manure* may be prepared by standing a large water-tight hogshead out-of-doors in a convenient place, filling it in the Spring with six inches of soil, and laying thereon six inches of bones, which are to be covered quite with unbleached ashes, then another layer of bones and ashes, and so on till the hogshead is full. It is to be left exposed to the rain till next Spring, when the bones will be found to be so soft as to crumble to powder under very slight pressure, and when mixed with the ashes and soil, they give a most valuable manure ready for immediate use. Any insufficiently softened bones may be returned to the hogshead with the next supply.

*Guano*.—The dung of pigeons, fowls, ducks, &c., is equal to—in fact guano is the dung of birds; that of the duck approaches it most closely. These dungs should be used in a fresh state; the old stuff is useless. Its only danger lies in using it too strong, but it is highly valuable in small quantities. The best mode of applying it is in a liquid state, not more than an ounce to a gallon of water, and not oftener than once a week; let it settle, and use only the clear liquid. The sediment may be mixed with dry soil and used as a top dressing, as a good deal of the fertilizing properties of the dung will settle down to the bottom.



### Liquid Manure

"Is a leaf producer, and should be used principally when the foliage is scanty, and then only in a *weak* and *clear* state, the coarse part being allowed to settle before the clear liquid is drawn off. It may also be applied with advantage when the drain on the plants is great, i.e., when they are coming into or are in bloom." It should be applied not oftener than twice a week, generally only once, and never stronger than one part liquid manure to two of water.

Every garden should have its liquid manure tank, which can easily be made by sinking an empty cask in the ground. It should then be filled to the depth of one-third with fresh manure, equal parts of horse, cow, and sheep dung, and a little lime, and the remainder with water; this should be allowed to stand for a month or so before being used.

*Ammonia*.—Five or six drops to every pint of warm water will cause "seedy" roses, fuschias, geraniums, &c., to become flourishing; it should not however be applied oftener than once a week lest it stimulate too highly.

"*Soapsuds* also are highly valuable on account of the animal matters and potash which they contain; they should be collected and applied to everything in the garden."

### Watering.

"Irregular watering is one of the principal causes of failure in plant culture."

When a plant is to be watered, the *whole* of the soil should be *thoroughly* wetted, after which no more water need be given till the surface soil again appears dry; slight waterings are destructive, but at the same time plants should not be watered too often; under ordinary circumstances the above rule will be quite safe—water thoroughly whenever you do water them.

Plants when coming into and in full bloom require more water than those going out of bloom.

In Winter those in bloom should be freely watered, but only partially so when not in bloom. They should never be watered overhead in cold weather; the leaves should be kept dry.

In Winter they require less than in Summer; "bear in mind that the lower the temperature is the less water should be given, and *vice versa*;" this applies with greater force to pelargoniums, fuschias, arums, petunias, &c.

In decreasing the supply of water, the *frequency*, not the quantity, should be lessened.





## Worms and Insects.

*Ants*.—A quart of water in which a moderate sized piece of camphor has been steeped will destroy them, and not be at all injurious to the plants.

*Greenfly*.—A strong infusion of carbonate of ammonia and an infusion of two ounces of tobacco in a quart of boiling water, which should be applied with a brush or syringe when cool, are the only things which should be admitted amongst choice Roses; the former not only destroys aphides but supplies the plants with good food, and the latter is not only a remedy but a protection.

*Insects* of all kinds may also be eradicated by watering between rows or plants with two ounces of kerosine oil to six gallons of water; they will disappear at once.

"*Lady-birds*" perform great service in destroying aphides, which should ensure them the protection of gardeners.

*Mildew, Blight*.—Syringe the plant with a solution of one ounce of nitre to a gallon of water, or dust powdered sulphur on the affected part.

*Worms*.—In dry warm weather, water the plants with clear lime water, one pound to three gallons, two or three times at intervals of as many days.

To destroy the eggs of insects which infest the bark of trees, paint or syringe the tree with a decoction of half a pound tobacco, half a pound of sulphur, and a quarter of a peck of lime, stirred well in four gallons of water,—leave to settle and draw off the clear liquid.

*Sulphur* has also been found to promote the health of plants most wonderfully, peach trees, in particular, being remarkably improved by it: it should be dusted on the plant either with a common powderpuff or through a bit of muslin.

Water, wherein the fresh leaves of the tomato have been steeped, is said to most effectually eradicate insects of all kinds from all plants watered overhead with it; fresh leaves may also be laid about and round the stems and trunks of large trees, when it will have the same effect.

The application of lime even in solution to remove insects on plants has been found to produce spots and patches on the leaves; preference should, therefore, be given to ammonia, which affords a potent means for their destruction.

*Ducks* are useful rather than injurious in gardens and fields, as they do not scratch and scrape like fowls do,—grubs and other underground pests are of course out of their reach, but all molluscs and other insects which waste the leaves of plants are greedily devoured by them, and wherever there is an abundance of water they may be kept with advantage.



*Guinea fowls.*—This may be said also of these; they will not harm the most delicate plants, and are said to be a sure "cure" for the Colorado beetle.

### Calendar.

"There are no idle moments for an attentive gardener."

*January.*—Plant out all unplanted bulbs, and protect also pansies and wallflowers for Spring display, pressing down the soil well. Keep auriculas and pots of cuttings and seedlings dry and don't water them so long as the soil is moist. Sow early potatoes, peas, lettuce.

*February.*—Plants in pots should still be kept dryish. Start fuschias; put geraniums into blooming pots; re-pot pansies, shift young pelargoniums; give auriculas a top dressing of rich compost. Plant out gladioli, primroses, and perennials; finish rose-planting and cut back to two or three eyes; mulch beds and top-dress pots of roses; protect beds from frost. Prune outdoor vines to three or four eyes, leaving only ripest wood. Medium sized fruit trees may now be safely moved. Prune fruit trees and gather scions for grafting early this month. Plant out August crop of cabbages and sow another.

*March.*—Sow annuals and evergreen shrubs of all kinds; and in the last week sow sunflowers, foxgloves, asters, dahlias, verbenas, calceolaria, cineraria, peas, beans, lettuce, cauliflowers, vegetable marrows, maize, and plant out Jerusalem artichokes. Uncover strawberry beds. Plant out tigridias, carnations, pinks, petunias, tropeolums, wallflowers, stocks, hollyhocks, also gladioli in both pots and borders. Graft fruit trees early in this month. Sow grape seed for new plants.

*April.*—Plant out verbenas, dahlias; lift narcissus bulbs when the leaves turn yellow; re-pot tuberose; pot off cinerarias, and put fuschias into their blooming pots. Sow pansies, biennials, and perennials.

Sow second crop of all vegetables, particularly those of which the first sowings have failed.

About April or May the "Chota Bursât" usually sets in. Seeds of all kinds which have not been successful will now germinate freely, and sowings should be made after the very first shower. Sowings recommended for these two months should be done during the Chota Bursât; but an unexpected shower of hail should be guarded against.

*May.*—Plant out all rooted plants intended for the garden. Divide daisies and violets, and plant out also fuschias, geraniums, petunias, heliotrope; re-pot camelias and pink oxalis. Sow mignonne, iceplant, portulacas. Mulch fruit trees with good crops, and remove all useless shoots; syringe well with soapsuds, and take







out useless shoots of vines. Plant out cauliflowers, cabbages, and lettuce for Autumn.

*June.*—The regular rains will be setting in about the end of this month, during which fresh sowings of those seeds which have failed may be made as early as possible. Remove auriculas into shade, take up tulips, keep pelargoniums which have done flowering dry, to ripen wood; shake down weak fruit from apricot and peach trees, and pick out where crowded.

Beds should be cleared of weeds as soon as they show themselves; they retard the growth of plants very considerably, and almost entirely destroy many kinds.

*July.*—Take cuttings of wallflowers, chrysanthemums, heliotropes, verbenas, roses, myrtles. Cut down geraniums and pelargoniums, and strike the cuttings. Layer carnations if long enough. Sow mignonette, calceolaria, carnations. Pot off struck cuttings of camelias, also hyacinths, cyclamen.

Plant out narcissus bulbs early; transplant crocus if necessary. Layer vines for increase and protect their borders from heavy rain.

Suckers of fruit trees, quince, apple, plum, &c., may safely be taken off and planted now. Sow cabbage and lettuce for Autumn planting.

*August.*—Same as last month: plant out seedling pansies, but protect from heavy rain. Pelargoniums and geraniums which have broken and grown an inch or so should be shifted. Pinch bedding geraniums; shift iris into their places. Transplant evergreens. Cut out useless shoots of fruit trees and plant out unplanted trees; they make roots at once and get well settled before winter. Make up beds of strawberries.

*September.*—Put cuttings of petunias, wallflowers, calceolarias, and heliotropes into light soil. Pot off struck layers of carnations; put cinerarias and auriculas into their blooming pots.

Plant out Winter cabbage, cauliflower, lettuce, and sow another lot for Spring planting.

*October.*—Plant out yellow oxalis, tulips, crocuses, &c. Divide and replant arums; commence withholding water from fuschias, which should have done flowering. Root-pruning of fruit trees should be done now if necessary.

*November.*—All plants in pots should now be put into their winter quarters. Plant out roses or put into blooming pots, and protect all outside with long litter, screen leaves, &c. Put pelargoniums into their blooming pots, also calceolarias. Cut down and cover up clematis. Take up gladioli. Paint fruit trees to destroy insects; prune weak trees. Sow good peach and apricot stones for scions and stocks; also almonds, walnuts, &c. Prune vines and lessen water by degrees.

*December.*—Renovate all garden beds; cover up bedding fuschias with cinders and rubbish. Prune pot-roses for winter flowering.

### Cuttings.

The proper *time* to take cuttings is when the sap is in full motion in order that in returning by the bark it may form a callous or ring of spongy matter between the wood and bark, whence the roots proceed. As this callous is best formed in ripened wood, the cutting should contain a piece of the old wood; or in plants which grow twice a year, such as roses of the wood of the previous growth; or in plants which are continually growing, such wood as has begun to ripen or assume a brownish colour. This is the true principle in regard to time, but there are trees such as the willow, which will strike at any time, especially if removed in winter, when the sap is at rest. Cuttings should be cut clean across under a leaf-bud, or as it were, at the junction of the old and new wood.

During the "rains," *i. e.*, in July, August, and September, is the best general time for taking cuttings; at this time slips of *anything* and *everything* will strike without any difficulty, provided that drainage and light soil are ensured, together with a good watering once a week or fortnight; at the same time they should not be kept out in the rain; rose-cuttings, however, may be kept out with advantage.

"The removal of leaves is of no consequence whatever; it may hinder, but it cannot possibly accelerate the emission of roots."

All cuttings or clippings of bedding plants may easily be struck; the best place is a cold frame; the next best is a border or bed out in the sun, if it is not scorching hot, without any shade or protection, where they will strike readily; the preference should be given to side slips and those nearer the ground rather than those from the summits or tops.

In preparing boxes for cuttings, those of 30 × 10 × 6 inches will answer all purposes. Put in a couple of inches of drainage, then an inch of rough leaf-mould, and the remainder of light sandy soil, or a composition of one part fine charcoal dust and three of clean sand, which is said to be the best to use; but sifted leaf-mould is as good as any: press down firmly, water; leave to settle, and next day plant the cuttings; a little shade, consistent with plenty of light and air, may be provided. They should be regularly watered till Winter, when they should be kept dry till planting time, either March or May, as they may be intended for pots or beds.

### Seeds.

"The germination of seeds also requires certain helps—heat, moisture, and air; but it must not be thought that the more of these they have the better. A heat of over 112° will destroy the germ, while one of 75° to 80°, especially if there is a degree of humidity in







the air, is favorable to it; too great moisture will result in maceration of the seed, which also would destroy the germ; air too is essential to their development. Seed sown too deeply will lie dormant till air by some accident reaches them. Light, however, hinders their development; in fact seeds always germinate more freely in darkness."

All these are found in the open texture of well-pulverized garden soil through which water easily runs carrying air with it, and it is obvious that moist or rainy weather is the best time to sow seeds. In very dry weather, a cold frame will probably be needed to ensure germination, together with regular waterings.

Never sow seeds deeply: this is a fertile cause of failure; a depth of about twice the diameter of the seed is quite sufficient, in fact they should only just be covered sufficiently to exclude light.

In sowing seeds in large beds, the bed should be raked level, the seed sprinkled evenly, and the upper half inch of soil moved backwards and forwards with the rake, without thrusting its teeth in too deeply, till the seeds are covered.

If sown in patches, a good plan is to take round a barrowful of good light soil, not too dry, and after forking up, raking, and leveling the bed or border, to press the bottom of a flower-pot where the seed is to be sown; this will make a circular smooth patch about half an inch deep; on this strew a dozen seeds, and with a fine sieve sift just enough soil to cover the seeds lightly, press lightly and leave them. Large seeds should be covered a little more deeply, or else they may get uncovered.

N. B.—The soil must *never* be allowed to get dry after the seed has *once swelled*. It should, therefore, be *regularly* watered in dry weather, with a fine rose or syringe so as not to disturb the soil.

Outdoor sowings should not be performed on soil in a very wet condition. If necessary to sow in wet weather or soil, a half inch should be taken out and replaced with dry or merely moist soil; as a rule it should be rather dry than wet, *i. e.*, only moist.

Avoid buying so called "collections," unless you know what they contain; otherwise you will find perhaps that three-fourths of them are little better than weeds, and not a dozen of the others are what you want or care for. Buy what you wish to grow.

*To preserve grain or seeds from mice and insects.*—Keep a clove or two of garlic, or mix camphor, with them; and before planting soak them for a short while in a solution of saltpetre, which will prevent worms in the soil from getting at them; camphor also stimulates their germination by shortening the period of it and causing more of them to sprout.

## Hotbeds.

Heap up a quantity of stable dung with an equal quantity of leaves, and turn all over four or five times during a fortnight, wetting it if

necessary. This preparation is important, or else the heat will be too violent and burn up the rootlets.

Then dig a pit of the dimensions of the frame, or a few inches smaller, and two or three feet deep; provide an outlet for water, and drainage; place the frame over the pit, fill up to the top with the prepared dung, and press down well.

When the rank steam has passed off, which it will in four or five days, lay on five or six inches of good loamy soil; by the next day it will be warmed to the temperature of the bed, and the plants or seeds may be put in. A short time passed in a hotbed will accelerate and promote the growth of small plants and cuttings, but care should be taken that they are not kept too close, or else they will grow very watery and spindly and become very tender. Plants and seeds for the hotbed should be put into "thimbles" and "sixties."

### Cold Frames.

The object of these is not to stimulate plants into growth, but to protect them from frosts and storms. A frame without the hotbed is a cold frame. A foot of earth should be drawn up round the sides to keep out frost.

If mouldiness appears, it is a sign that they are kept too close; give plenty of air, in fact the lights should always be kept up except when frost, sharp winds, heavy rains, or fogs prevail. Avoid an excess of moisture; a medium state approaching dryness is better than overwetting. During sharp frosts cover with mats, in which way they may remain covered up for a week with the thermometer at 35° or 40° with impunity. As soon as possible, give fresh warm air, above 40° outside, otherwise the plants will be started into sickly growth, resulting perhaps in failure.

### Greenhouses

Are cold frames on a large scale, and are used for larger plants than can be accommodated in frames. From these it is that the conservatory is replenished, and plants requiring to be grown under glass may be cultivated in them.

In winter preserve a minimum temperature of 40°, give as much air as possible, and keep perfectly clean; put in a fire on dull mornings to keep out the damp. Keep everything in a semi-dormant state.

### Conservatories

Should run north and south, the sides presenting east and west aspects to the sun's rays; but their aspect need not necessarily face the south, in fact most plants get on better with a northern one.

*November.*—"In this month, if frost threatens, the plants should be moved into a *safe* place, not *warm*, which would be the most







*unsafe.* Plants that have stood for months in the open air should not be suddenly shut up in a close confined atmosphere." Unless the wind is very cutting, or the thermometer under  $40^{\circ}$ , the doors should stand open night and day, otherwise the warm air would excite premature growth and prove fatal to their flowering in proper season, if at all; changes should, therefore, be gradual.

As soon as frost appears, shut up before sunset, and keep the temperature as low as possible, consistent with exclusion of frost and dispelling of damp. A minimum temperature of  $40^{\circ}$  should be aimed at during the night. All the air possible should be given in fine weather; which, however, should be by ventilators or windows, without exposing the plants to cold draughts. Fires should only be lighted on cold, wet, dull, damp days, and never on clear, bright days, unless frost is great. "Nothing destroys flowers so fast as bright sun shining on a house where fires are lighted; rather suffer a decrease of  $5^{\circ}$  in the temperature than increase it by fires on bright days." In fact, for such winters as we have, fires may not be needed at all, except in very severe seasons.

If the external atmosphere is ungenial, and if a dry or rather a low temperature is maintained, conservatories may be kept shut up for a fortnight not only with perfect impunity, but with positive benefit to the plants: embrace, however, every opportunity of admitting fresh air during sunny hours if the outside temperature is above  $40^{\circ}$ . If the external air is warm and genial, the more the better, otherwise the less the better.

By keeping plants "dry" is intended not that they are to have no water, but that they should have only sufficient to keep them from drooping.

*March.*—While Spring frosts continue ventilation should be given cautiously, especially to newly-potted plants; but air should be given whenever it can be safely done.

*Tobacco touch-paper* for fumigating: to prepare.—In an old iron saucepan put a quarter of a pound of coarse Shag tobacco in three pints of water; boil for 20 minutes and strain; mix therein two ounces of saltpetre and two or three pinches of sulphur. Then roll coarse brown paper loosely and steep them in the solution; keep the pan near the fire to keep the decoction warm, and turn the paper upside down occasionally.

When quite saturated, lay the paper in flat dishes and pour the decoction over it; let the whole stand till cold; then remove and dry the paper. A strip merely lighted will fumigate a room like magic.

2. A quarter of a pound of finely powdered tobacco distributed evenly over three strips of paper, each a foot long, and rolled loosely into the shape of a "pickwick cigar," is sufficient for a small greenhouse. Light the cigars and place them upright in empty flowerpots.

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### Annuals.

An easterly or westerly aspect for these is better than a southerly or northerly one; the south is too hot and the north too cold.

A moderately light and not too deep soil is the best; six or eight inches with a firm subsoil, will produce good plants.

*Half-hardy*.—Calceolaria, Clintonia, Evening Primrose, Love Lies Bleeding, Lupines, Marigolds, Stocks, Sweet William, Sweet Peas, Sunflowers, Zinnias. Sow early in March and treat the same as Hardy.

*Hardy*.—Alyssum, Calliopsis, Candytuft, Canary-creeper, Clarkia, Collinsia, Convolvuli, Chrysanthemum, Gillia, Godetia, Larkspurs, Poppies. Sow in March or during the "Chota Bursât" in light soil, moderately manured. Where they come up thickly, the weakly ones should be thinned out to make room for the stronger ones to grow in. In dry weather, a good soaking occasionally and the removal of decaying leaves will improve subsequent blooms as well as strengthen the plants.

### Biennials.

Canterbury Bells, Honeysuckle, Hollyhocks, Carnations, Brompton Stocks, Wallflowers. Sow early in March.

Should be transplanted at least once, when big enough to handle. When taken up they should have good balls of earth with them; June is the best time for this.

### Perennials.

Those who have no glass to grow tender and half-hardy annuals may easily grow the hardy annuals and perennials, neither of which require a single pane to grow them well.

In preparing a border for these the soil should be well dug and dressed with manure and leaf-mould, and thoroughly pulverized: a good depth of soil is important, as these plants are generally allowed to remain undisturbed for some years in succession, receiving no further attention than annual digging and dressing. They should, however, be lifted every four or five years, and the borders well renovated.

If the soil is shallow and on a hard subsoil, their blooms will be poor and short-lived.

Anemones, Asters, Bulbs of all kinds. Campanulas, Candytuft, Everlasting Pea, Gentian, Perennial-Larkspur, Phlox, Poppy, Primrose, Pyrethrum, Ranunculus, Ribbongrass, Valerian, Wallflower.

Sowings of all the above should be made on the commencement of the "Chota Bursât," or during the regular rains, so as to be strong enough to stand through the Winter.







The hardy annuals and biennials and perennials should be planted out in their permanent situations in September before the last two or three showers of the rains, or in February, providing protection from frost and snow.

### Deciduous Shrubs.

Almond, Genista (Creeper), Myrtle, Lilac, Spiræa, Guelder-rose, Berberis (C.), Laurel, Clematis (C.), Passiflora (C.), Wistaria Sineusis (C—grows from fifty to two hundred feet). All are excellent for planting in shrubberies, and bloom at a time when others are not in flower. When once settled, all deep digging about their roots should be avoided, but a top dressing of decayed leaves and manure annually benefits them greatly.

### Evergreens.

Large evergreens may be safely transplanted in the Rains, early in August; and if this is properly done, they will start into growth in Spring as if they had not been moved.

### Air-purifying Plants.

"*Toolsee* inhales ammonia, and converts it into sal-ammoniac. *Sunflowers* and *Maize* manufacture nitre."

Malarious and foul gases may, therefore, be easily absorbed by the cultivation of these plants, besides Heliotrope, Roses, Lemon-geranium, and Mignonette: all these should be grown in the garden, with a border of Sunflowers and Maize, wherever convenient to grow them. "A single plant of Mignonette will keep the air of a room pure, besides filling it with a delicious odour."

### Anemones, H. P.

Seeds sown in Spring, and tubers planted out in Autumn or very early in Spring, will flower in the following Spring: a good, light, rich, well-drained soil is necessary; also an occasional change of places, but this should be done only when the beds require renovating and when the leaves quite die down.

### Arums.

Divide and pot them off in *October* in rich mould, and water them well till they have done flowering, i.e., all the time they are growing and in flower; a better plan would be to stand the pots in saucers of water; by this means the offsets will be induced to flower earlier than they would otherwise, which they will about the third year. After blooming keep them rather dry till it is



time to re-pot them again. In good soil of the depth of a foot, they may be planted out and allowed to stand out all the Winter.

### Auriculas

In pots may be started in Autumn, and the earlier the better. The best soil for them is half good fresh loam, one-fourth well-rotted dung, and one-fourth sand. Use one-third drainage and fill in the soil like a cone, on the top of which spread out the roots and fill in the compost firmly; it should not, however, be allowed to get into the crowns. Never water till absolutely necessary, and then do it thoroughly; except when throwing up flower stems, February and March, when they should have plenty, with an occasional dose of liquid manure. Sow seed early in Spring in light soil, cover with a pane of glass till germinated, keep in shade carefully till large enough to plant.

They should have a sunny aspect from about October to May, and a shady one from about May to October.

*June.*—Remove to a north aspect and give water only when necessary. Re-pot in *September* in “twelves.”

*November to February.*—They should have as much fresh air as possible, and being in a state of rest, but little moisture should be given.

*February.*—Stir up the top spit, and replace with fresh well-rotted (avoid strong) manure.

They may also be grown in beds, which should be made up in October; press the soil well round them, and give an occasional dose of liquid manure; they should be carefully guarded from frost, and should be shaded when in flower.

### Balsam.

Sow seed in March in pots, and as soon as they show the third pair of leaves, pot off singly in “thimbles” in good loam; and when they have grown large enough, they may be planted out in beds to flower. Never let them want water, but don’t give too much, or else they will damp off.

### Begonias.

Essentials for which are heat, moisture, and shade, and they require a rich, loamy, and slightly sandy soil; keep them dry in the Winter, and re-pot and start again in March; but when planted out-of-doors, a sunny situation and good rich soil should be chosen, where they will produce a great profusion of bloom for a long time.





## Bulbs.

"Most bulbs require to be taken up every second or third year; when this is not done, the good bulbs are in danger of being smothered by the offsets which form round them. No fixed time can be given for this, as the variety is so great; but one invariable rule which must never be infringed is, that they must not be disturbed while in a growing state, *i.e.*, while their leaves are green," except Crocuses (which see).

"Bulbs are not matured till the leaves die down of their own accord, before which they should not be touched; they may then be taken up and stored in a cool dry room to give them a period of rest from one to three months until the planting season comes round again."

*March* is the latest month for taking up all Autumn flowering bulbs; if left in the ground for three or four weeks longer, they put forth new fibres and waste their strength.

*June*.—By this time the last of the Spring flowering bulbs should be ripe enough to take up.

When taken up, they should be dried in a cool shady place in the soil which adheres to them when taken up. The offsets may be planted again immediately in a nursery-bed to grow till they reach maturity, or stored with the parent bulbs; the former is the better plan.

All Autumn flowering bulbs should be planted out in *June* or *July*, and Spring ditto in *November*.

They flourish best in good, rich, light soil of loam and leaf-mould, but they do not bear a too close contact with fresh manure. These bulbs in borders in May should have a good mulching from the liquid manure tank, for "it is at this time, *i.e.*, while in a growing state, that Nature makes the greatest efforts and requires the greatest support."

The flower stalk should be cut off after flowering, which strengthens the bulb and ensures finer flowers in the following season, but the leaves should not be touched.

Bulbs planted in pots half filled, lower half, with unslaked lime, will flower in a couple or three weeks.

*Crocuses* should be planted out in beds and borders in September, four to five inches deep, in light soil, and they will flower freely for many years if undisturbed; but it is advisable to lift and transplant them every fourth or fifth year. The best way to plant them is to draw a drill widely and plant a double row a couple of inches apart; this may be done in the rains, even if they are green or in flower.

*March*.—If the soil is at all hard, the beds should be broken with a rake before the leaves appear.



Single bulbs in a *forty-eight*, or three in a *twenty-four*, do very well if proper attention is paid to drainage and soil.

*Cyclamen, H. P.*—Pot the bulbs in equal parts loam, leaf-mould, and manure, with charcoal drainage, covering them half an inch. After blooming, plunge or keep the pots in a shady well-drained border, till they again begin to grow, about August or September; they should then be turned out of their pots, and only so much of the soil removed as can be taken off without injuring the roots, keeping the ball entire; re-pot in the same soil.

Out-of-doors, choose a light gritty soil for them in a slightly shaded situation, where, if undisturbed, they will bloom almost always; protect in Winter.

Seed may be sown at any time in Summer, and the seedlings should be potted and started about August for Winter flowering.

*Gladioli*, "if left to themselves, soon form numerous weak and puny bulbs; they should, therefore, be raised annually and the offsets taken off."

To bloom early pot them singly in *March*, and plant out early in *May*, when about six inches high, in light soil.

For late flowering, they need not be potted at all, but may at once be planted out in borders in *February*, not more than two inches deep in deep rich soil; they suffer greatly from dryness, and should therefore be well watered in dry weather; but when done flowering they are better without any; put the pots out of the way, and as soon as the leaves turn yellow the bulbs are sufficiently matured to be taken up, and should be kept in a dry place. They do better perhaps in beds and borders; here they will form fine bulbs and may be left in the ground, but should be protected from frost so long as their leaves remain green, and the bulbs thereafter from snow.

The young bulbs about the size of peas, which form at the base of the parent bulbs, should, when the latter are prepared for starting, be rubbed off and sown in drills like seed; they will all flower by the third year.

*Hyacinths* should be potted in *August*, in loam and very rotten manure, with a liberal allowance of sand, one each in *forty-eights* or *thirty-twos*; they may then be exposed to gentle showers. They may also be grown in moss, which is found on banks near the roots of trees, and which should always be kept moist.

*Iris* should not be disturbed too frequently, but their division and planting should be done in *August* or *September*, which is the best time, as they have then time to settle themselves before the Winter sets in; any situation, except a *densely* shaded one, will suit them; but a well-drained dry soil and warm exposure are preferable.

*Liliums*, "combine in their characteristics the three most desirable features in flowers—hardiness, beauty, and fragrance. They are all hardy."







*In pots.*—They should be in good soil, about equal parts good loam and leaf-mould, with about a fourth or eighth part of sand, well drained with crocks. Avoid stable manure as its use is injurious. The bulbs should be put in half an inch below the surface and well pressed down, the soil should be moist, but the pot should not be exposed to wet. No water is necessary till they have shot fairly above the soil, when they should have a good soaking occasionally and then kept always moist. When buds are forming give weak liquid manure once or twice a week. The flowers are liable to spot and decay in a close damp atmosphere; a verandah or sitting-room suits them admirably. When the flowers die off, water less freely and expose to sun and air to ripen the bulbs.

Single bulbs will flower well in *twenty-fours*, but threes or fives in *twelves* will make a grand show.

*Out-of-doors.*—If the soil is heavy, reduce a couple of feet of it to a light sandy loam with a large proportion of leaf-mould; a light soil need only be well dug. Plant the bulbs five or six inches deep in groups of three or four to a dozen, and do not disturb for three or four years, as they flower better if undisturbed than when freshly planted.

"The flower of the *Lilium Auratum* is so obnoxious to flies that they will not remain in a room in which it is kept."

*Lily of the Valley* can be easily cultivated out-of-doors by planting in clumps in a light leafy soil and shady situation, about twelve inches apart; they will ultimately run together and form fine masses.

*Narcissus.*—"Offsets form *below* the old bulb, and would in time burrow so deep as never to reach the surface of the soil in time to be worth anything; they should, therefore, be raised annually." Re-plant early in July in loam and manure. When done flowering and the leaves turn yellow and die down, they should be taken up and stored in a dry room; removals should be done at once in dry weather; if left in soil at all moist they will throw out new roots and get weak.

*Oxalis.*—Plant the little bulbs in large shallow boxes, tubs, or pans, in rich loamy soil, and water regularly. The time for planting the yellow is October, mauve in March, and pink in June. Snow does them little or no harm.

*Tuberoses.*—Pot off in rich loam in April and plunge the pots in a bed; keep the soil slightly moist until they begin to push, when they should be well watered every day or so; give them also a good soaking with liquid manure once a week in dry weather, which will very materially help them on. They may also be planted in the open bed, where they will flower freely if fed with liquid manure.

*Tulips* will grow almost without care and in any soil; but the best soil is a good rich loam; perfect drainage is absolutely necessary; dig and stir it up well and plant out the bulbs, three inches deep, in October or November. They will appear in February, and should be

protected from frost; the flowers should be protected from the sun or else they will get spoilt, and also from heavy rain. Take them up when the leaves turn yellow, about June, and keep in a cool airy place.

In pots, the soil should be equal parts loam and leaf-mould and one-fourth well-rotted manure, with good drainage.

### Calceolaria.

Take cuttings early in September and place in well-drained and light soil in a north border, press down, water well, and cover with a handglass; or place them in pots, which being sunk in the soil, should be covered with a handglass.

In this way they can be kept without further attention till Spring, when they should be potted off in light rich soil, as for Cinerarias, and will soon become fine plants.

*January.*—Old plants should be carefully watered and decayed leaves removed. Peg them down to root along the stems and thus strengthen the plants.

Sow seed in March or July, cover very lightly, and keep in a shady situation out-of-doors. When large enough to handle, pot off the seedlings singly in a compost of loam, leaf-mould, and manure, using charcoal for drainage. They should have their final shift in April into light rich soil, pegging down the branches.

Some of the plants may be planted out in the garden in May.

*November.*—Remove dead leaves, shift into larger pots, and house them; water forward plants with clear liquid manure, and fumigate if, and as soon as, aphid appears.

### Camelias

Are essentially conservatory plants. They are easy of management, and require the most ordinary attention, and not much of it either.

*January—February.*—They should have all the light and air possible on calm mild days, but should be protected from cold winds; at the same time the temperature should not be warm, both would cause the buds to drop. They should be watered only when the slightest dryness appears, but then watered well; the frequency, not the quantity, should be increased or decreased.

*March—April.*—When advancing into bloom, in full bloom, and after blooming, they should be well and frequently watered. During these periods they should also be frequently watered with liquid manure, but it must be clear, weak, and in a tepid state, otherwise it will do more harm than good, as these plants have no power to assimilate gross food. In dry weather they may be syringed with tepid water until the flowers begin to expand; the blossoms must on no account be rubbed, touched, or wetted, they show at once any and the smallest spot.







Two buds should not be left together, as one would spoil the other. Decrease in frequency of watering should begin now.

*May—June.*—As soon as their blooming is over, they should be trimmed into shape; all useless or not wanted shoots being removed and planted as cuttings, and as soon as the new leafbuds appear after the pruning, is a favourable time for re-potting such as require it; care should, however, be taken to prevent exciting them too much.

They should have plenty of air and light to harden their wood; a good plan is to imbed the pots in soil under a canvas shed, or in well shaded and the most sheltered places in the open garden.

In re-potting, turn out the ball of earth, remove all the soil possible without disturbing the roots, and place in a pot two inches larger, with plenty of drainage; fill in fresh soil all round, press down and water well, shading for a day or two. They require a rich soil, say equal parts of loam, leaf-mould, and manure.

*September—October.*—Great care should be taken in housing these plants, as a sudden transition from a high to a low temperature, or from dryness to moisture, would cause all the buds to drop.

They are easily propagated by cuttings, which should be taken from end shoots, because they sooner make large plants and the top bud takes the lead. One joint under the soil and two or three above will be sufficient; they should be cut clean below the bottom joint. Fill one-third of a pot with crocks, and fill up with compost to within an inch of the top; shake and press down firmly; put in an inch of clean sand and settle the whole with a good but gentle watering; stick the cuttings in the sand, resting them just on the compost, but not in it. A slight watering with a fine rose should then be given to close the sand round them. Put a glass over them, and the pot in a gentle hotbed.

Water when dryness appears, and remove and wipe the glass every fourth or fifth day and cover again. They will begin to grow before rooting, but when rooted in a few weeks, they should be potted off in "sixties" about July. Use plenty of drainage and fill up with compost, making a cone in the middle; shake out the cuttings carefully, without injuring the roots; take up one, spread out the roots over the cone and fill up; very little, if any, of the stem should be covered. Press down gently, water well, put into a gentle hotbed for a few days, and then keep in the shade till the following Spring.

Camelias may also be grown in open borders or shrubberies; they will thrive in a north border in soil two feet deep, loam, leaf-mould, and cow manure; but they should never be allowed to suffer from drought, and should, after flowering, be well watered with liquid manure.

Snow should not be allowed to lie on the branches, and straw bound round their stems is a very efficient protection against frost and snow.

**Carnations—Picotees, H. P.**

Seeds may be sown at any time, but in the Rains is best; they should be put in light soil, and the seedlings planted out in beds in rich soil as soon as they show five or six leaves, and protected in Winter. They should be planted out where they are to bloom, early in Spring, in soil two-thirds loam and one-third manure. Take up the plants with balls of earth, renew and manure the soil, replant, and water well till settled, which will be in two or three weeks.

If planted out in beds, they will grow without trouble.

They may also be bloomed in pots; pot firmly and shelter in very bad weather; they are thoroughly hardy and only need to be kept out of the snow; they are, however, impatient of wet and suffer from mildew, and therefore cannot have too little wet or too much air. For show flowers, the plants should have all the side shoots rubbed off, leaving only the top buds, and in *May* they should begin to have lots of water. Those in flower should be shaded, and have plenty of liquid manure, the surface soil being stirred occasionally. If seed is not wanted, the flower stems should be taken off after flowering.

*July—August* are the months for layering; trim off all the leaves except three or four at the top; slit a joint through obliquely, beginning below and ending above, about the length of an inch; bend it down into the soil, and cover with rich light compost; two days after they should be watered; or the plants may be cut down and the slips planted as "cuttings;" they should be cut with a clean, oblique, angular cut right through a joint, and put in sand and mixed compost.

*September—October.*—Pot off struck layers or cuttings, water sparingly, and place in a cold frame for a few days, or plant out in beds prepared for them.

In potting them, no manure should be used but only good loam and a little sand.

The difference between a Carnation and a Picotee is, that the coloured veins or bars run, in the former, from the throat to the edges; and in the latter, round the flower.

**Chrysanthemum.**

Seed should be sown in March, and a stoppage or two at every fourth or fifth eye will be productive of fine flowers and copious blooms; at the same time they should be freely watered with liquid manure.

To grow them to perfection they should be renewed annually by cuttings, which should be taken from the top twigs, about three inches in length. To grow them dwarf cuttings should be taken and struck in July.







## Cineraria.

Sow seed in February for early plants, and pot off in "sixties" when well up early in April; keep in a cold frame, in slight shade in hot weather, and out of heavy rains.

In September, shift into larger pots; water forward plants for Winter flowering with weak and clear liquid manure, and smoke with tobacco if aphids appears. The soil should be equal parts loam, leaf-mould, and manure, liberally mixed with charcoal grit; keep clean, remove decaying leaves, of which, however, none should be allowed to stay; and throw away all but the choicest kinds as soon as they show flowers. If large plants are desired, cut out the first flower-stems to induce side-shoots.

After flowering, cut down, and in March shake out each sucker separately and proceed as above. House them for the Winter, guard against damp with proper drainage, water carefully, protect properly from frost, and give all the air possible.

## Clematis. H. P.,

Is a hardy climber, very suitable for walls or arbors. A rich, light, loamy soil is the best, and if mixed with chalk and lime, all the better.

*November.*—If frost has disfigured the plants, they may be cut down to six inches of the soil and covered up to keep the frost from the roots.

## Columbine, H. P.,

Requires ordinary treatment in good garden soil.

## Dahlias.

*April.*—Tubers may be planted out three or four inches deep and five feet asunder in ordinary garden soil. In preparing them for planting out, do not be afraid of using the knife freely to cut away decayed portions.

*June.*—A good watering overhead in the evenings in dry weather, the soil being stirred about the roots, will get them on without check.

*July.*—All weakly shoots should be cut away, and cuttings of good sorts taken from short-jointed side ones.

*September.*—If first-rate flowers are wanted, disbudding and thinning out of weakly and useless shoots should now be practised, and a good soaking with liquid manure given occasionally.

*November.*—The tubers should not be taken up till the leaves dry up; but when they do, the stems may be cut down to six or eight inches, and either the whole bunch uprooted and hung up in a dry room, or plunged in boxes of dry soil or sand, or, which is

best, they may be left in the ground ; they need be only slightly covered up and screened from frost and snow. They may be left in their places for two or three years without being disturbed, but it is desirable to replant annually.

*Seeds* may be sown in March, and as soon as they show three pairs of leaves should be potted singly in "thimbles," which has the effect of strengthening them for planting out, and in about the third week of May they may be planted out in well-manured beds.

### Daisies

Should be divided and planted out in September, or as early in Spring as possible, or after they have done blooming. A light, rich soil grows them to perfection.

### Fernery

Must be in the shade ; some ferns will grow in the sun, but none will look really well in it.

Good loam mixed with leaf-mould and sand is the best soil for them, although, perhaps, leaf-mould only will grow them as well. The soil should be laid over and about rocks, stones, stumps, knarled roots, &c., "round which their roots love to cling" and of which a liberal use should be made.

### Fuschias.

*January.*—These are now at rest and should have very little water.

*February.*—They may be started. "Never cut down and shift a Fuschia at the same time ; nor shake them out for re-potting till they have begun to grow and have expanded a few leaves. They *must* be allowed to break before being re-potted, and all pruning should be done before the roots are disturbed." As soon as strong buds have grown an inch, which should be the only ones left on, the others being rubbed off, they should be shaken out, the roots pruned freely, and finally re-potted in coarse, rough soil, not sifted.

During the period of growth they should be stopped at least three times, but not just before or after shifting. The best pots for blooming them in are *sixteens, twelves, and eights*. They will grow in almost any soil, but the best is half yellow garden loam, one-fourth leaf-mould, and one-fourth well-rotted manure, or half loam and half leaf-mould, with some broken charcoal and sand. If potted in the last mentioned soil, feed them with liquid manure, which is perhaps preferable to mixing manure with the soil ; they should be liberally watered with liquid manure and kept in the shade, by which their season of bloom will be greatly prolonged. Seed-pods should be pinched off at once.

*April.*—They should be in their blooming pots, a size larger, by the end of this month at the latest. In shifting them at this time







the entire ball of earth should be re-potted without being broken, the soil being pressed firmly in all round.

*July.*—Cuttings should be taken from strong robust tops, about two or three inches long are the best. In a month they may be potted off in *sixties* and replunged in the bed. Pinch out all but the strongest shoot, which should be made to lead.

*September—October—November.*—After flowering, and when they begin to shed their leaves, the withholding of water should begin, and they should then be finally housed for the Winter.

A large number of *Fuschias* are perfectly hardy and may be grown in beds and borders in good soil, and preserved through the Winter by being covered with leaves, cinders, and rubbish to keep out the frost. Do not cut their dead branches till they begin to sprout; then rub off also all weakly and crowded shoots, and put them through a course of pinching out.

### Garden Baskets and Ornaments.

Tubs or boxes bound with ironhoops or bindings to keep them together, and split wood nailed over them to give them a rustic appearance, and fixed on rustic stands of rough branches, look very pretty. But paint them, if at all, of any color but green, which so far from showing off the green of the plants, drowns it. They should be filled with good rich soil, and furnished with plants according to taste. See "*Hanging Baskets.*"

Plants which would admit of a succession may be put in in small pots, and changed as soon as their bloom is over for others in bloom.

*Ivy baskets* on grass plots are also very pretty. Make a framework of pine or oak branches, with the bark on, of the required shape and size; round the outside plant ivy thickly; in a year or two the basket will be quite covered, after which the ivy must be kept closely clipped; the basket may be filled up with soil and planted with suitable plants.

### Geraniums.

To grow large and fine plants select a strong-looking, recently struck cutting; pot it singly and cut it down to three eyes; these will throw out three shoots, which should be stopped as soon as long enough to leave two good joints; at the same time shift from a small to a larger pot: as the branches grow they should be pinched, shoots which would crowd or cross each other being removed altogether.

In *July* or *August* it should be deprived of water, cut to a skeleton a week after, then re-potted, and kept comparatively dry. They may then be started for flowering at the proper time in the following season. They do best in a soil of half yellow loam, one-fourth leaf-mould, and one-fourth old manure, with a little sand.



"They are impatient of wet, and it is better to let them flag a little than have an excess of moisture."

After blooming keep them dry for some days, and when the soil is pretty dry, cut them down, leaving just enough to make moderate plants next season; when the wounds have healed, re-pot, pruning their roots, into smaller pots. The slips may be struck almost like weeds, and strike in less than a month. Take slips of four to six joints, up to eight or nine inches long, cut them clean across just below the lowest leaf or joint, remove the lower leaves, and insert in equal parts of loam and leaf-mould.

During these months the wood is in its prime for cuttings, and the sooner they are taken off the better will they thrive. Cuttings should be taken from the *outside* of plants and beds; these are usually shortjointed and firm and make finer plants than others.

They will also strike readily in the sunniest part of the garden, provided they are plentifully watered, and shaded when the sun is *very* powerful. Geraniums having a superabundance of sap, the best plan to prevent decay is to remove the cuttings direct from the plant, and plant them in the sun, where, if well watered, they will root better and faster, form stronger plants, and get through the Winter better than if kept always in the shade. A cool, shady place is not a good place for them. During the Winter they should be housed and kept rather dry. See "*Pelargoniums*."

*February*.—They should be put into their blooming pots now, and kept moderately moist, liquid manure being given at every fourth watering, and when warm weather sets in they should have regular supplies of water.

When the pots are filled with roots, liquid manure should be given, which will keep their leaves green and add brilliancy to the flowers.

Those intended for beds should be potted in February and transplanted in *May* into their beds without disturbing their roots. This should, if possible, be done as soon as the "*Chota Bursât*" begins.

In *August* pinch out the tips to make them grow more strongly and flower better.

"Geraniums are a preservative against *snakes*: though the flowers are scentless, the leaves contain a volatile oil with a pungent odour which no snake will approach." Therefore, where snakes are feared, surround the house with a cordon of these plants.

### Grass Plots and Banks.

For each square rod of ground half pound of seed will be required; mix this quantity well with six cubic feet of good, dry, well-pulverized soil; clean and make the plot or bank perfectly level and tread the whole evenly; rake level and spread the mixed seed and soil evenly all over. On a sloping bank, a better way is to mix





the seed and soil in a tub filled with liquid manure, diluted with two-thirds water, so as to bring the whole to the consistency of mortar, which should then be laid on as thinly and evenly as possible. For plots, sufficient water may be further added so as to allow the whole to run freely through a rose with large holes. Keep the plot or bank moist for a week or fortnight, when a fine carpet of green will appear.

### Hanging Baskets

Show off to advantage plants of a trailing habit, which should be planted in suitable pots, in rough, lumpy soil, and put into the baskets surrounded with moss. If boxes are used, one or two holes should be made to drain off superfluous moisture; wood, however, soon decays and forms fungi, which is injurious to plants; zinc-lined ones would be better.

The best plants for these baskets are pendulous *Fuschias* and ivy-leaved *Geraniums*, the soil for which should be rough and lumpy; if fine sifted soil is used they are apt to die off most unaccountably:—*Verbenas*, *Petunias*, "Aaron's Beard," *Mimulus*, *Nasturtiums*, *Canary-creepers*, *Heliotrope*, *Dwarf Convolvuli*, *Crocuses*, *Ferns*, *Rice*, *Wheat*, *Cress*, &c.; these latter may also be grown in damp moss only, which, after being well wetted, will, in a few days, sprout into a beautiful green bunch and remain so so long as it is kept wet, which it might be by being immersed daily for a few minutes in a bowl of water.

### *Heliotrope*, H. P.,

Should have plenty of sunshine and lots of room to grow in; it thrives best in the ground, where it should be planted out in rich, dry soil. They must be kept protected from frost and snow, but in warm situations will stand the Winter outside if the roots are protected.

For pots, select good plants and shift them into good rich compost, shade from the sun, and give a showerbath occasionally, as well as weak liquid manure.

Cuttings will root freely in July in gentle heat, in the same way as *Verbenas*. Pot off in Spring, and keep in gentle heat till well established.

### Holly and Oak Edging.

Acorns sown thickly in a drill will, in the course of a year or two, form a very pretty edging, and have a good effect, and may with an occasional clipping be kept four or five inches high.

Hollies may be treated in the same way, but it is better to grow them in a seed-bed, and transplant them when two or three inches high.



### Hollyhocks, H. P.

Seedlings are generally the best, besides giving the chance of new varieties. Sow seed early in March, and in a couple of months remove to a nursery-bed, taking care not to break the rootlets. While in their seed-beds water them well to encourage vigorous growth, and plant out in the nursery-bed six inches apart, where also they should be well watered.

Early in *April* put them in their blooming beds at four or five feet apart in good, rich, loamy soil.

Cuttings strike readily, and those in pots should be kept in a cold frame for the Winter.

### Honeysuckle

May be treated in every way the same as creeping roses.

### Hydrangeas

Grow best in rich loam; they require plenty of water. Cut in after flowering and re-pot about October, and keep them sheltered from frost and snow.

Strike cuttings in July.

Their colour may be changed to blue by watering with soapsuds, or a solution of alum or nitre.

If planted out-of-doors, they grow without any trouble beyond requiring a good watering occasionally in dry weather.

### Iceplant.

Sow seed in "*Chota Bursât*" in light soil, cover lightly, and pot off singly when large enough to handle. Water well, and in dry weather give a little weak liquid manure; keep in the shade and protect from sparrows, which are very fond of it.

### Marvel of Peru, H. P.

Seed should be sown late in Autumn or very early in Spring, or rather the end of the Winter; they will come up on the approach of Spring. Cuttings will strike easily in July; select strong robust tops. Any soil and any situation will suit them; the drier the better perhaps.

### Mignonette.

To produce fine plants they should be potted not more than three strong plants in a *twenty-four* in very rich soil. Pinch out the first blooms and continue the pinching for a month, during which give liquid manure once a week. The result will be fine blooms two







or three months after sowing (which should be done in May), and the plants will continue in beauty for several months.

### Mistletoe.

In the Spring of the year make an incision in the bark of an Apple, Pear, Oak, Willow, or Medlar tree, on the *under* side of a hanging branch to prevent birds from getting at the berries; insert some well-ripened berries, and carefully tie up with matting, or woollen yarn, or moss. By these means it may be easily propagated.

### Nasturtiums.

Sow early in March in drills, an inch deep in light soil like peas. "The richer the soil the more rampant will they grow, and the poorer it is the more 'floriferous' in proportion to foliage; rich and well manured soil is not, therefore, desirable for these plants unless grown for salading. Give the tall kinds something to climb upon."

The tender seeds when pickled are by some preferred to Capers.

### Pansy.

Seeds may be sown at any time and the seedlings planted out in nursery-beds, when large enough to handle, three inches apart.

Those that are to bloom in pots should be re-potted in *February*; "twelves" are the best. They may be kept growing all the year, during the whole of which they will bloom if decaying flowers and seed-pods are taken off. When in flower they should be shaded.

The beds for them should be in open situations and raised with bricks a foot or so high; this should be filled with equal parts loam, leaf-mould, and manure. This raised bed will answer every purpose.

*March.*—The beds may have a top dressing of good manure between the rows; the rains will wash it in between the roots. A gentle forking up without disturbing the fibres will greatly benefit them.

The plants must be protected from frost, and may remain in the bed during the blooming season.

### Pelargoniums.

*February.*—Complete the shifting of young stock; soil, two-thirds loam, one-third leaf-mould and manure. Cut out all weakly and superfluous shoots.

"The sun striking upon drops of moisture upon the leaves is one great source of *spot* on these plants; this should, therefore, be avoided."

*March to May.*—Water carefully to prevent any check, using liquid manure once a week and latterly twice a week; give plenty of water.

*June.*—Those that have gone out of bloom should be exposed to sun and air preparatory to being cut down.

*July.*—About the end of this month diminish the water, in order to harden the wood.

"The great secret of profuse bloom is *early strong autumnal growth*." As soon as the flowers begin to fade, put the plants out-of-doors to ripen their wood; when it gets slightly brown, cut down to three or four eyes and leave them in the same place to break; when the shoots have grown an inch, shake them out of their pots, slightly prune the roots, and re-pot in light soil in pots as small as the roots will fit into. If intended to flower in May, pinch out the tips of the shoots when they have grown a couple of inches in August; if in June, stop in January; if in July, stop in February; for later blooms, stop in March; all at fourth joints to induce lateral growth.

"Under-potting is also of great importance in inducing profusion of bloom: plants in general and Pelargoniums in particular flower best when doing their best to burst the pot asunder; the energy they acquire seems to rush to the other extremity and expend itself in flowers. The reason seems to be that whatever checks the formation of wood favours the development of flowers."

This is also the best month to take cuttings; select firm short-jointed shoots, six inches long, and plant in soil equal parts loam, leaf-mould, and sand. When eight or nine inches long stop them so that they may throw out lateral shoots, and when these have grown an inch or so, pot them off singly in *forty-eights* in equal parts loam and manure, with a little sand; thin out leaves and small weakly shoots to strengthen the rest.

In *November* they should be put into their blooming pots with charred cowdung for drainage.

One or two waterings with lime or soot water will impart a rich dark colour to the foliage, and destroy worms in the soil.

"*Winter treatment.*—Those who have no hothouse may winter these plants in a spare room. The best would be one with a bow-window and southerly aspect; the more light they have the better, and no more watering than is sufficient to keep them from flagging and drooping. Overwatering is one of the greatest evils when they are stored where frost is only kept out; by being kept comparatively dry they multiply their active rootlets, which ensures rapid progress and robust plants in Spring, and they will, moreover, not suffer even with the thermometer at freezing point, if all about them is dry."

Bedding plants should be lifted before they are injured by frost, and with as little injury to their roots as possible. All large leaves, long footstalks, and long straggling roots should be removed; they should then be planted two or three together in "sixteens," or six or eight in "eights," in soil of equal parts loam and leaf-mould, and housed.







### Petunias.

Sow seed in March and plant out the seedlings as soon as the weather will permit, which will be about April, at intervals of two feet.

*Cuttings* which are taken off and struck in August and hardened off, *i.e.*, provided with plenty of air, watered sparingly, and kept out of the rain, will flower in the following Spring to perfection and far earlier than Spring cuttings would.

They do best in rich dry soil (two-thirds loam, one-third manure, and a little sand or grit). In damp and wet situations they are apt to damp off. Their treatment is about the same as for *Heliotropes*.

### Portulacas.

About the commencement of the "Chota Bursât" dig up and well manure a bed, and sift an inch of fine soil over it. Then mix a packet of seed with fine dry soil, sprinkle it evenly over the bed, and leave without watering.

They will be up in a few days, make fine plants in a month, require very little watering, and will flower all the year.

They succeed best in dry, sandy loam and in hot dry situations, such as exposed rockwork, where the sun is most powerful.

### Roses

Should be planted in rich soil; light soil for the delicate varieties, and heavy for the hardier kinds (*vide* "Soils"); but perhaps the best is that composed of equal parts loam, leaf-mould, and manure; this with frequent waterings with liquid manure and clean water will produce abundance of bloom.

The third or last week in October is the best time for re-potting in their blooming pots, "sixes" or "fours."

When re-potting, remove all decayed wood, bruised roots, &c., and cut back the head to about one-third its size; and about the end of February or March again to two or four eyes.

*February.*—They should have a surface dressing of well-rotted manure. As the buds begin to appear, they should be removed into the shade to bloom, and all suckers at once taken off. After flowering, remove to where they can have plenty of light and air, and give a good soaking with liquid manure once a fortnight until their growth is completed, and once a month thereafter, when they may be removed into the open air till Autumn, when again they will require to be shifted. The tips of all gross watery shoots should be pinched out when they are about six or eight inches long.

Watering should be carefully attended to. Roses, as a rule, require but little water during Autumn and Winter. In Spring,

when the buds break, an occasional shower is of service; as they advance and gain foliage, and the sun gets powerful, the quantity of water should be increased; and when in full leaf and throughout the growing and flowering season, abundance should be given, provided of course that the drainage is efficient.

Their exposure to light soft rains is also very beneficial to them.

To make them flower in Winter, they should be kept in a temperature of  $50^{\circ}$  or  $60^{\circ}$ , pruned in September or October, and well watered with liquid manure.

### Roses in Beds and Borders.

*January.*—Liberally manure all the ground occupied by them, and stir up the soil all over, taking care not to injure the roots.

Proceed with the planting and pruning of hardy roses; cutting back to two or four eyes will ensure a healthy vigorous growth; and all old wood, loose bark, &c., should be removed.

*March.*—All planting should be finished by this month, and recently-planted roses should be copiously watered.

*May.*—Are now in their glory, and should have the soil about them stirred occasionally and well saturated with liquid manure.

*November and December* are the best months for planting out hardy roses; in fact, planting and pruning are the chief employments this month.

In planting, the proper soil for them is rich loam with well decomposed manure and leaf-mould. If the soil is poor, dig out the earth to the depth of two or three feet, and the same in diameter, and fill up with equal parts of rich, strong loam, leaf-mould, and manure. It is the best way to secure good blooms, and it is useless to plant them in light soil.

Trim the roots, remove all the long coarse ones, and place them in the hole with the collar on a level with the surface of a mound six inches high, which should be raised all round to allow for settling; press down, and lay an inch of mulching all round.

The season for planting is any time between the fall of the leaf in November or December till the buds begin to swell in March, after which there is danger of the plant dying off.

*Pruning* should not be done on roses newly planted; they should be planted as early as possible, and the head left on for a month or six weeks till firmly rooted, then cut back to three or four eyes; and the weaker the growth the shorter should it be pruned.

In pruning the object should be to balance the head; if there is only one shoot cut down to two or three eyes. If there be regular heads, cut down to the lowest bud that points *outwards*, and cut out all weak and thin shoots that interfere with better ones. When the buds begin to break rub off all that grow inwards, all that cross other good branches, and all that are weakly and likely to crowd the head.







*Cloth of Gold, Marshal Neil, Solfaterre*, and other creeping Roses.—Enrich the soil with good well-rotted manure and leaf-mould in equal parts. A southerly aspect is best for them, and they should be trained against a wall or pillar. Every ten days or so give a good soaking with liquid manure. As the branches grow, nail them against the wall and stop the shoots at every eighteen or twenty inches by pinching out the tops. Protect in Winter and defer all pruning till the beginning of *March*, when all old wood should be taken out or shortened.

*Moss Roses*.—"Require a warm, rich soil with an airy exposure; moisture, which, however, should not be stagnant, and shade are essential to their preserving their mossy character." The soil should be deep, rich, and warm, with a liberal allowance of manure; and to ensure good blooms in Spring, shift and replant in fresh compost in November. Cut closely back to three or four eyes.

*Pillar Roses*.—Plant a ten feet stake or pillar, tarred at the bottom, two feet below and eight feet above the surface; round this plant three roses—a white, a pale-colored, and a dark variety; cover the surface of the mound with manure, and water with liquid manure in dry weather. Fasten one of the most vigorous shoots of each to the stake, stop further growth when the stake is topped, and the side shoots will, with regular pruning, flower abundantly for many years.

When one of these has grown bare of foliage and bloom, it may be restored to health by pruning back to one or two eyes in October before the leaves have turned yellow; in February cut the secondary shoots back to three or four eyes, and about the middle of April cut off every leaf to where the eyes appear to be dormant. In July stop the strongest shoots, disbud, and thin out weakly shoots. In October prune back the shorter shoots to one or two eyes, the middle-size ones in February, and the strong ones in April, as before. In October and February again prune as usual, and in April of the third year leave the shoots alone, and a splendid bloom will reward your patience.

*Cuttings* may be taken at any time, but the best is Summer and Autumn. The best soil for these is equal parts loam, leaf-mould, and sand; keep in the shade and water well twice a day for the first fortnight.

*Suchers* taken off and planted in Spring in suitable soil will flower the same season, but should, as a rule, be cut out at once from the parent plant.

*Soot-tea for old Rose bushes*.—Put some soot from a woodfire chimney into an old pitcher and pour hot water over it. When cool water the trees with it overhead two or three times a week. Its effect is wonderful in producing a rapid growth of thick, large leaves and a great number of richly-tinted blooms.

*Continuance of bloom*, to ensure. As soon as the flowers have begun to fade, cut down to a strong bud; a new shoot and flowers

will be the result. Attention to this point will keep the plants flowering almost continuously.

### Sunflowers.

Kidney beans and potatoes agree admirably if sown together; the neighbourhood of the sunflower is advantageous to the potato; the seeds are excellent for poultry, pigeons, &c., and renders them more prolific; the leaves and green stems are good fodder for cows, rabbits, &c. Early in March sow three seeds in the space of a few inches, two feet apart; and when eight or ten inches high leave only the strongest plant and pull up the others, as they require plenty of room; plant beans between them or at their feet, they will all act in unison in supporting and shading each other; plant potatoes between the rows.

### Sweet Peas.

The cultivation of this pretty fragrant flower is very much neglected; failures are due to poor soil, sowing too thickly, and not allowing a luxuriant well-developed growth; the soil should be rich, and the pods should be removed at once, to keep up the bloom: by these means they may be made to bloom all the Summer till destroyed by frost.

### Verbenas

Are easy to strike from cuttings. Take short, fresh, stumpy tops which have not flowered; cut evenly below the third joint; take off lower pair of leaves. Dig out a bed three feet by one and one and-a-half feet deep, and fit on a box, without bottom, on the top; fill in and beat down ten or twelve inches of half-rotten leaves, and over this about three or four inches of light soil, equal parts of loam, leaf-mould, and sand; press down all firmly. In this plant the cuttings a couple of inches apart, water, and cover the box with panes of glass. Spring-struck cuttings are the best, but they may be struck in July, which perhaps is the best time for this. Shade from bright hot sunshine and keep always moist.

When struck, pot off, and during Winter do not allow them to get dry, at the same time the soil should be but just moist. Early in April plant them out in beds of rich loamy well-drained soil. Well decomposed cow-manure is the best for light soil and leaf-mould for retentive.

Seeds may be sown in the "Chota Bursât," but germinate very irregularly, being as long sometimes as two months; they succeed in almost any situation, but require protection in Winter.

### Violets, H. P.

In April or May, when done flowering, they may be broken up







and freshly planted for the following year in rows three or four inches apart, taking off all the "runners." An easterly and partially shaded aspect is the best for them; the soil should be highly manured, but loam and leaf-mould suit them admirably.

A good plan to grow them in beds for years without disturbing them is to take off all the runners as soon as they appear outside of the plant, thus keeping each plant distinct and bushy.

*September.*—They may also now be taken up and replanted in pots and housed; but at this time they should be taken up with balls of earth. This second replanting, however, is not necessary, but a good dressing of well-rotted manure, two inches thick, should be spread over the beds.

Sow seed in March in a bed of light soil, and when the plants are large enough transplant into nursery-beds, where they may be left to flower.

### Wallflowers, H. P.

Seed may be sown in the "Chota Bursât," and the seedlings, when big enough, about two inches high, should be planted out in beds to grow for a while.

In *September* or *February* they may be removed to their blooming beds and borders, being taken up with balls of earth at the roots, or else they will not do well. They will grow and bloom in barren soil, but for a continuance of bloom they must have a rich one, as for *Roses*.

A slightly shady place and covered from the rain is the best for them.

Cuttings may be taken in the same way as *Roses*, i. e., with heels, and struck in light sandy soil, early in July. Snow will do them no harm, but it should be shaken off the branches.

### Window Gardening.

If the plants are to be kept in pots, a ledge should be provided for them outside. Circumstances would soon suggest themselves under which they should be put in or out.

Or with sufficient means of shading, protecting, &c., a trough lined with lead or zinc may be fitted on the ledge so as to suit the taste of the grower; of course means for the exit of superfluous water must be provided; so also should proper drainage and soil, which last should be at least a foot in depth, the length and breadth of the box being as circumstances will admit of. Any plant suitable for pots may be grown herein according to taste and fancy.

### Flowers.

*To preserve freshly gathered.*—Place them in a vase into the water of which a pinch of saltpetre has been put; stand the vase in a saucer of water, and place a glass shade over the whole. In this way they will last for several weeks.



Or mix a tablespoonful of charcoal, or a little carbonate of soda, in the water in which they are placed, and they will remain fresh for a fortnight.

*To restore withered.*—Withered flowers or cuttings may be revived by standing them in a mixture of three or four drops of spirits of camphor and an ounce of water.

*To dry and preserve.*—Dip them in thin gum water and after draining for a couple of minutes, set them upright in a vase. The gum forms a thin transparent coating over them and preserves their form and colour long after they have become dry and crisp. A glass shade should be put over them to keep the dust from settling on them.

*To obtain double.*—Plants transplanted several times a year to prevent their flowering for two years can, it is said, be made to produce double flowers.

*Chemical change of colour.*—"Amongst the pleasing proofs of such chemical changes taking place within the plant, I may mention the effects upon the colours of their flowers, which follow upon the application of certain substances to the roots of the plants; charcoal powder darkens and enriches the flowers of the rose, the dahlia, petunia, &c., carbonate of soda reddens ornamental hyacinths, and super-phosphate of soda alters in various ways the hues or bloom of other plants."—*Chemistry of Common Life*.

*Perfumes of,* "which cannot otherwise be had for love or money, and which, nevertheless, are daily wasted in our gardens, may easily be obtained by the following process: fill a clean large-mouthed jar or bottle with clarified fat, place it near a fire or in the sun till melted, and throw in as much as possible of the flowers the scent of which is wanted, and after twenty-four hours strain, and repeat the process daily. In a week the finest pomade is obtained. For use the fat should be cut into small squares and dissolved in spirits of wine which immediately absorbs the delicate perfume."

Oil may be perfumed in the same way.

*Scent Pomade.*—Make frames a foot square and two inches deep, with a ledge inside to support panes of glass; on the glass spread a layer of pomade, formed of one part beef suet and lard three parts, thoroughly clarified by boiling in water. On this lay a thick layer of the flowers of which the scent is wanted, and remove and replace fresh flowers every day for a fortnight or till the pomade is well scented. These glasses may be piled one over the other which will prevent the perfume from escaping, but different kinds of flowers should not be heaped together.

*Fragrant Ornaments* may be made by pounding together fresh rose petals with a little powdered cinnamon and cloves into a stiff paste, which is then formed into beads, crosses, &c., these when dried become as hard as pebbles, are very pretty, and retain their fragrance a long time.





## FOREST TREES.

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Almonds and walnuts can be easily propagated by sowing the nuts in Autumn. As the former grow on long tap-roots, they should be sown in their permanent stations; they will germinate in Spring. A good watering in dry weather will materially help them on.

"The Poplar has one golden quality, it will not burn." It may be easily increased by putting in cuttings, which should be large, in the Rains.

*Borers* in trees, to kill—Stop up their holes with hard soap; it is a simple and good remedy.

*To destroy the roots of large trees.*—In the Autumn bore a hole in the stump, an inch or two in diameter and eighteen deep; put in a half ounce of saltpetre, fill with water and plug closely. In the following Spring put in a gill of paraffine oil and light it. The stump will smoulder away, without blazing, to the end of every root, leaving nothing but ashes.

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## FRUITS.

*To preserve Apples and Pears, &c.*—Pack them in clean dry chopped straw, so that they do not touch each other; or cut them into eighths, extract the core, and dry till quite hard in a kiln. When wanted for use, pour boiling water on them and let them stand for a few minutes; the water is a good substitute for fresh juice.

*To preserve Fruit.*—Pick the fruit from the stems and put them into bottles, filling quite up; put on corks loosely and set them upright in cold water; put on the fire and heat till the water nearly boils, let them stand fifteen minutes and fill with boiling water to an inch of the top, cork tightly and let them cool. Pack them on their sides and keep the corks moist. The fruit is better preserved if not quite ripe. In this way it will keep two or three years.

### Orchard.

The season for planting is any time from October to February, when the leaves are all off, if the weather is clear and not frosty; the preference might be given to February, if warm weather has not started them into growth; but if the buds have begun to swell, there is danger of a check which is injurious. Plant only in clear weather.

Small trees may also be safely removed with balls of earth, and planted during the Rains.

Buy or obtain only small trees as these, generally have lots of fibrous roots, while in taking up large trees only the thick stumpy roots are taken up, leaving all the spongioles behind. A small tree will, therefore, grow faster than a large one planted at the same time, and come sooner into bearing.

In planting them be careful that their "collars" are not more than just covered, deep planting is the bane of fruit trees; they should be planted on a slight mound to allow for settling. To guard against carelessness in the nursery, stand the roots in soap-suds, or a mixture of cowdung and mud, (see "Planting") and be careful to give them a fair chance of life and health by digging the holes for them wide and large, so that they may be surrounded with loose earth into which the tender rootlets may penetrate easily. If thus planted, a tree will have a better chance of surviving, and grow as much in five years as another carelessly and badly set will in ten. To prepare ground for them, dig a pit three feet in diameter and depth, and fill in with good soil. Prune the roots to about six or eight inches all round, removing the tap-root altogether as also all bruised or broken roots, with a sharp clean cut; spread out the roots, cover with good mould, and press down firmly; run a







stake deep into the soil close to the tree and tie the tree to it to keep it from being blown down by high winds.

Apples and apricots should be planted in loamy and slightly gravelly soils; pears, in dry silicious soil; plums flourish in calcareous soil; and the cherry, in a silicious one.

All fruit trees cease to be productive in moist humid soils.

Good suckers of apples and quinces may be utilized for increase; take them off, and those with rootlets may be planted in March or July; if in the former, they should be regularly watered in dry weather till settled: cut the butt end of those without roots into a wedge shape, and run it into the split top of any root of the same thickness; they will unite, and when grown to a proper size may be transplanted.

Peaches having a tendency to throw out suckers, their roots should be directed downwards, first laying a layer of manure round them.

Seedling peaches will bear fruit in three years if grown in pots in the greenhouse; out-of-doors they will be two years longer. In Spring, cut back to within a foot of the ground, and train one leading and two side-shoots, and if summer pinching is resorted to, they will bear all the sooner.

Peaches and nectarines in pots should be taken up and replanted in fresh mould every five or six years, a larger quantity and superior fruit will be the result.

Sow the stones in the Autumn; they will come up in February, and may be transplanted at once or in the Rains. They will come into bearing in three or four years if pinching out and rubbing off useless shoots is resorted to. Seedling peaches and apricots should be transplanted in March and well watered.

Cuttings of quinces and apples strike easily if put in during the Rains.

*Grafting* is adopted for propagating good or rare varieties on well established stocks of the common kinds; and for procuring the early fruiting of good kinds, which would otherwise take several years to arrive at maturity. The easiest mode is "crown grafting," and this should be done early in *March*.

Branches to be grafted upon should be headed back to a foot of the trunk; make the cut smooth, and cut a slit in the bark two or three inches long, raise the bark with the spathe of a grafting knife or the flat part of an ivory-handled eraser. Cut the scion six or eight inches long and with a smooth angular cut, an inch or more in length, with a shoulder at the top end of the cut; fit it into the slit in the bark, with the shoulder resting on the wood; tie the bark tightly over it and cover half an inch thick with grafting clay, two-thirds strong adhesive clay and one-third cowdung well beaten together till thoroughly mixed. The clay may be removed in the Autumn. Cut back to six or eight buds in the first year, likewise in the second year, leaving only three or four shoots, which only should

be left on if there are more; and the same should be done in the third year, after which they should be allowed to grow at will.

Stone-fruits should not be grafted on pip-fruits, or *vice versa*. Pear grafts should have the preference given to quince stocks, on which they do admirably. Apricots on peach stocks attain astonishing vigour. Grafts on plum stocks do not get on well, in fact soon fail.

Scions should be gathered some weeks before being grafted, as it is desirable that the sap of the stock should be in brisk motion when grafted, whereas the scions being gathered earlier the buds are kept back and swell only when placed upon the stock. Collect them, therefore, in February and bury them at full length in dry earth, out of reach of frost, till March, when they should be grafted.

*Chinese method of propagating Fruit Trees.*—In Spring strip off a ring of bark an inch wide from a bearing branch, just below a leaf-bud, scraping off all the bark till the clean white wood below appears (apples and quinces will throw out roots without taking off this ring of bark); surround the place with a ball of rich earth bound fast with matting, or in a box fitted on. Over this suspend a vessel of water, so that the water to be put therein will *drop* from a hole in the bottom on to the earth, thus keeping it constantly moist. Saw off the limb as soon as the rootlets appear through the bandage; or take them off at the fall of the leaf or at planting time, and pot or plant them. The following year they will bear fruit.

Protect the roots of all fruit trees from Winter frosts and Summer heat with straw, ferns, long litter, or sand.

### Pruning.

“Leaves attract the sap, and the sap acts with great vigour on vertical shoots, weak ones will, therefore, be assisted by being trained vertically, and strong ones will be checked by being trained horizontally, or their ends arched downwards. Sap develops more vigorously under short pruning than long; to obtain wood branches, therefore, prune short; and fruit branches, long; the less vigorous branches produce abundance of flower buds. The more the sap is retarded in circulation, the more will it develop flower-buds and the less branches.

“Pruning should be performed when the tree is at rest, the period which follows the severest frost and just before the first movement of the sap; in ordinary years about the end of February. All Winter pruning should, therefore, be done at this period, especially the peach, but the end of November is by some preferred for the pruning of apples and pears.” The cut should be made with a sharp knife beginning on the side of the branch opposite to the bud, and on a level with it, ending just above it, in a slanting and upward direction.







The following general rules should not be lost sight of:—

“(1.) The branches should be so arranged that every part of the tree may be exposed to the light and air, and the tree itself properly balanced.

“(2.) To allow no branches to remain which are unfitted for their functions.

“(3.) Fruitfulness and luxuriance are opposite qualities.

“(4.) Extreme fruitfulness is as injurious to the tree as exuberance of foliage.

“(5.) True art consists in regulating all these.”

All pruning should be finished by the end of February.

The season for pruning is generally in Autumn and early Spring. A weak tree should be pruned directly at the fall of the leaf, which will strengthen it and more freely develop the blossom buds; to prune later in Spring, tends to check the tree, and is one of the remedies for over luxuriance.

The shoots to be retained on apples and pears on walls should be short-jointed brownish ones, which should be cut back to buds, which will extend the growth of the tree, studying (1) the production of fruiting spurs, (2) to keep open the heart of the tree, (3) to keep the shoots within as compact a range as possible, as the best fruit is always borne at the extremities of the branches.

Peaches “bear fruit on the previous year’s growth, new growth is, therefore, absolutely required; the pointed single buds with a brownish envelope are leaf-buds, higher up are *triple* plump silver-crested ones, one on each side of a leaf-bud—these are flower-buds;” cultivate as many as possible of these last. Remove all useless shoots, and stop those with fruit at the base, leaving two or three leaves above them.

From all trees remove at once all shoots and sprouts which will require to be pruned in Autumn; and if crowded, thin out the fruit, never leave two touching each other; this is important to obtain good and large fruit. Give a good mulching in April and June.

Large standard trees in full bearing require pruning but once in three or four years; all useless shoots should, however, be removed at once.

After the fall of the leaf, if the trunks are found to be infested with scale and insects, paint or syringe them all over with soft soap, to which sulphur, quicklime, and tobacco-water have been added; or even a good dressing with a strong decoction of lime and wood ashes will destroy moss and insects and promote their health; the outer bark will fall off and the tree assume a healthy appearance and bear fine fruit. A better way would perhaps be to *powder* the tree while wet, so that the lime may adhere; it is more effectual than a wash, and more execution can be done in one day by this dusting than in a week with the wash; all these being dissolved by rain, descend to the roots and add vigour to the tree.

If black or green fly appears, tobacco water should be used freely and at once ; when the leaves curl up, larvæ are present, cut off all the curled leaves and syringe the underside of the remainder with soapsuds and tobacco water.

Don't throw away any soapsuds, they are of great value for fruit trees of all kinds.

If mildew appears, dust the affected leaves and shoots with flowers of sulphur, slightly damping them to make it adhere ; the health of all trees, and of peach trees especially, is wonderfully improved by the application of sulphur.

### Melons.

The culture of these is nearly similar to that of cucumbers. Sow in "thimbles," in a hotbed, as early as possible, to give them a good start. Plant out, when large enough, in good rich soil, well trodden down over a bed of dung and leaves a foot deep and eighteen inches wide. Stop them when twelve or eighteen inches long, and put up a trellis for them to creep upon. Allow only two shoots to each plant, and when the fruit has set, stop the shoots a joint or two above two or three of the best fruit. No more than these should be allowed, and all other sprouts and shoots should be pinched out. It is important that the plant be not allowed to ramble after the fruit has set: the fruit will ripen four or five weeks after setting.

### Strawberries.

New plantations should not be delayed longer than September, which is the proper time for making up beds, if fruit is expected the following year. It is of great advantage to plant early, but if this cannot be done, they may still be made up in February ; in the meantime plant out the "runner plants" in August or September in beds so as to admit of removals in February without check and with balls of earth. In February select those with full plump crowns, these will flower and fruit the same year.

A deep, porous, highly manured and well drained, but somewhat moist, not wet, soil is requisite for these plants.

Make beds four feet wide and as long as you like ; dig two trenches a foot deep and wide ; fill in half the depth with good manure, and mix well with the soil ; fill in the excavated soil, and plant the plants therein, a foot apart each way.

It is important to mulch with manure after planting ; it feeds them and makes them bear more freely.

In February, when fear of frost is over, uncover, clean, and weed the beds, trim the plants, stir up the soil, and give a good dressing of manure, soot, leaves, &c. It is also important to keep their roots moist by mulching, which prevents evaporation ; liberal waterings should be given in dry weather, when the plants are in flower and when the fruit is swelling, to grow them to perfection.







Lay clean straw and leaves between the plants to keep the fruit clean, and after taking off the fruit remove all runners not wanted for propagation, which will ensure finer fruit the following season; but it is not always desirable to take off all the runners, as it would perhaps induce too much foliage; when the runner has formed the second joint, it should, if the first has rooted, be taken off near the parent plant, and so on till July, when all should be taken off as soon as they appear.

It is not necessary to renew the beds yearly, in fact they are better for being left undisturbed for three or four years or longer, if the plants are kept free of runners, old and decaying leaves, &c. These permanent beds may be cropped with lettuce, cabbage, &c., and the runners for propagation can easily be layered between them, where they will form strong vigorous plants and produce heavy crops of large fruit if other particulars are attended to.

To save seed, rub a few of the finest well ripened fruit on a slate or pane of glass to let the pulp dry up; when dry rub off the seed which may be sown immediately if the weather is moist, otherwise keep till Spring.

In sowing seed, loosen the soil of the bed and tread evenly and firmly; then rake up an inch deep of it, press the rake handle in the loose soil to form shallow drills, six or eight inches apart, scatter the seeds thinly, and sift a little old manure over them till lightly covered; the young plants will appear in a month, and should be planted in their fruiting beds in August or September: all runners should be taken off from them at once.

### Vinery.

*Speedy method of stocking a Vinery.*—One large tree or a friend's vinery might be utilized for this purpose, if he will allow it, and I don't see why he should not.

"Early in July select supernumerary shoots of any length, and run a last years joint through or into a pot or box filled with loam and leaf-mould, and keep the soil moist. In fifteen or twenty days roots will be plentifully formed, and the layer may be safely detached, any fruit thereon will continue to grow and come to perfection. A grape-house may thus be stocked in three months as completely as in any other way in as many years."

For permanent borders, the soil should be dug out to the depth of three or four feet, thorough drainage provided, and filled up again, first with leaves and animal refuse, then lime rubbish, and the remainder with good loamy soil. In this the vines should be planted, the roots being trimmed and spread out; by this arrangement they will come rapidly into bearing.

About February, expose the roots and cut out about half of them, leaving one or two of the main ones which have grown deeply

into the ground, and re-cover with fresh rich compost; for a month after give a good watering once a week if the weather is dry, and one of liquid manure twice a month. This system of root-pruning never fails to produce immense crops.

To prune to advantage, cut the shoots from the main stems to two or three eyes, each of which will produce one or more bunches; thus pruned vines have been known to produce large crops, while cutting close has often proved injurious; three or four main stems will be sufficient for each plant. This pruning should be done in February; later pruning is apt to make them "bleed."

When fruit has formed about May or June, all useless and fruitless branches not required for next year should be cut or pinched out.

Heavy rains should be kept off the borders in which the roots are by some sort of covering to throw off the water.

The disagreeable processes involved by the application of blood is not nearly compensated for by its supposed advantages, and to bury carrion in the borders because vines are said to be gross feeders simply poisons the soil, in which not even a vine will grow, because carrion destroys the spongioles or feeding parts of the roots: the best way to feed a vine during its growing and fruiting stages is either by liberal applications of liquid manure, or top dressings of good well-rotten manure.

Vines and cabbages are deadly enemies; the former will surely die out if they are planted near each other.

The constitution of vines is weakened by constant propagation by layers. Seedlings should, therefore, be raised and kept in reserve: these are also more free from phylloxera.

*In pots.*—The Black Hamburgh is the best for this mode of growing them.

If not forced they will begin putting forth plenty of shoots in February; they should then be replanted and started in a compost of loam and manure; fourteen inch pots are a good size for them. Rub off all the shoots except those which are wanted; these should not exceed four or five, and should be trained so as to have the full benefit of sun and air; give a good soaking with tepid water in cold weather, and water liberally with liquid manure when in bloom and with fruit. When the fruit begins to swell, stop the shoots a joint beyond the bunch, except the leading shoots in young vines.

Prune them a month or so after the fruit is cut, *i. e.*, November, and lessen the water by degrees; but in June and July they should be well watered with liquid manure to swell and perfect their buds.

*Bonemeal* embodies the most of the necessary ingredients of all grape fertilizers. It should be applied as early in the season as possible, and will last for two or three years.

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## VEGETABLES.

"Make it a golden rule to get in all crops as early as possible. A dry hot June prevents their making headway unless well established."

"There are not many which will grow *in the shade*, or rather in *shady situations*. It would certainly be useless to try peas, beans, potatoes, and cabbage; but salads do fairly well. On the other hand, where it is observed that a cabbage grows vigorously and makes a good heart, there any vegetable will grow too. A useful lesson may also be taken from weeds; anywhere where docks, thistles, and other weeds grow luxuriantly, there any vegetable may be grown."

### Artichokes.—(JERUSALEM.)

Almost any situation will suit this plant, but the more open the better; and the only cultivation necessary is to loosen the soil a little when they show themselves, and when also a little of the soil should be drawn up round their stems.

Plant like potatoes not later than the first week in April in deep rich soil, but the finest tubers are produced in a dry loamy one enriched with leaf-mould. They should be planted in rows a yard apart and two feet between the sets, which should be put in six inches deep. Any part of the tuber will grow a plant, but it is better to select middling-sized whole ones for this purpose.

By pinching out the flowerbuds the tubers are increased in size.

They should not be cut down before the leaves quite dry down, or else the growth of the tubers will be stopped.

Tubers for future planting may be preserved by being buried in a cool shady corner or under a shady tree, about a couple of feet deep; they will continue to grow.

### Beans,

*French*—May be sown towards the end of February and June in a border fully exposed to the sun, three inches from seed to seed, two inches deep, in drills two feet apart; raise the soil in a ridge two inches higher, covering the seed four inches. (See "Sunflowers.") Gaps may be filled by thinning out those growing too thickly and planting out in the gaps on mild mornings, so that they may get warm by night.

The soil should *not* be manured, as it is likely to make them run all to haulm.

Top those in bloom as soon as aphid appears, as it is these tops they first attack. Moreover, if topped as soon as the first flower



opens, the crop will be quite as large as if not topped, and they will set much earlier. Mulching increases the quality and quantity of the crop. Water at the roots if necessary, but not overhead.

*Scarlet Runner*—May be planted at any time in April on each side of a walk; in which case stake long thin rods seven or eight feet high and tie them over at the top to form arches, with cross rods at intervals of two or three feet. A pleasant shady walk will thus be soon formed. (See "Sunflowers.") With a little care in watering and manuring the Runners can be kept green and in bearing till killed by frost. All the beans should be removed and not allowed to ripen on plants from which table supplies are drawn. A separate row or plot may be grown for seed, or in circles with five or six beans in each.

These beans are unsurpassed for flavour and productiveness, and are the most profitable to grow for eating in a green state.

### Beetroots

Contain more nutritive matter than any other root except potatoes.

Sow the seed early in March, or in the "Chota Bursât," in shallow drills a foot apart, in ground fully exposed to the sun and away from trees; cover, tread, and rake level. When a foot high thin out to a foot apart, leaving the best colored in preference to vigorous plants, for the better they are, the less likely are they to grow large and strong. Large roots are deficient in flavour.

A rich deep soil, manured the year before, is proper; freshly manured soil is undesirable, and a good dressing of salt is very beneficial.

Store as carrots, cutting off the leaves, but not too close to the roots, and let the wounds heal before putting them away, which should be where they will be free from damp, mould, and frost.

### Cabbage.

Give the preference to Savoy cabbages, as they are large and so hardy as to stand Winters, which have destroyed every other vegetable.

The seed should be sown in beds four feet by twenty, which will easily take two ounces each. They should be away from trees and shelter of any kind. Sow two crops, one early in the "Chota Bursât" for Autumn planting, and the other early in July for Winter planting. They may, however, be sown at any time of the year. Dig out a few inches of the soil, fill up with fresh stable dung and cover with the removed soil, and pat it down with a spade; on this sow the seed and cover with rich light soil to the depth of one-eighth of an inch.

When they are up keep rather moist to promote vigorous growth. Give a liberal dusting of lime, salt, and charcoal-dust now and again after watering, so as to adhere to them, which will prevent the attacks of greenfly and worms and benefit the young plants; or let in a few ducks periodically, which will destroy large numbers of worms without doing harm to the cabbages.





They are greatly improved by transplanting, and when the seedlings have four leaves or are two or three inches high, they should be planted out in nursery-beds four or five inches apart. Their next move, when five or six inches high, if weather is clear and warm, should be to their permanent beds, the soil of which should be well dug and manured, particularly for the red cabbage, which grows to a great size and remains in the ground a long time. Plant them in drills three or four inches deep, in which the plants should be put twelve inches apart; if the weather is dry, dip the roots in liquid mud (see "plants") and water well for a few days after.

The after cultivation is easy and simple; weeding, stirring the soil, and drawing it up about the roots, and a copious watering in very dry weather, are all that is necessary. They are also much benefited by a good watering with liquid manure once a fortnight or so.

In cutting them for use, always leave the stump with two or three leaves, an abundance of sprouts will follow.

Sow all the borders with *hemp* seed (half a dozen to an acre, but the more the better), and although the neighbourhood be infested with caterpillars, not one will approach the cabbages.

To hasten the hearting of those that have stood the Winter, tie up in the same way as lettuce.

### Capsicums.

Sow in "Chota Bursât" and plant out in warm situations just before the Rains, in a well-manured bed in a sunny situation, or pot them off and plunge in a bed, where they will perhaps bear better than if planted out in the open soil.

### Carrots.

Sow early in March and in the Rains; no manure should be used in the beds for them, as it induces them to fork and renders them liable to be grub eaten. A sandy soil is advantageous.

Sow the seed broadcast and thin out to three or four inches, as they do not require very much room; or which is better, sow in drills, three or four seeds to every six or eight inches; they will germinate in from one to three weeks and may be drawn as required for use.

In October or November they should be pulled up and stored for the Winter in a shed, in moderately damp mould and banked up with straw to keep out frost; kept thus they retain their natural sap and colour.

In August or September a sowing may be made to stand through the Winter.

### Celery

Should be sown in June. Dig a trench eighteen inches deep and three feet wide, fill in fifteen inches of manure, tread down firmly



and cover with three inches of light soil. Plant the young plants in this, when large enough to handle, in rows eight or nine inches apart. They require plenty of water, and should be shaded from very powerful sun and glare a few hours each day. Peas may be sown between the rows, which will afford shade to the celery.

### Cress

Should be sown in a cool, moist, well-manured corner under a north wall, in early Spring; and if kept watered and well moist in hot dry weather and protected in Winter, it will continue to yield successive crops for several years.

### Cucumber.

Dig out a trench of any length and breadth and fill in with prepared stable dung,—*i.e.*, laid in a heap and turned four or five times during a fortnight, being wetted if dry; if not treated in this way it is apt to heat too rapidly and burn up the roots of the plants; an equal quantity of leaves should also be mixed, as the heat is thus made more moderate and lasting,—to the depth of three feet, and over this a foot of soil, press down firmly and put in the seed early in March. Pinch out the tip as soon as the plant has made two joints; and again after the third joint of the new shoots. In dry weather they should be regularly and copiously watered to get them on. Trellis-work should be provided for them to trail over.

Before sowing the seed, throw them into a bowl of water for a few hours; the good will fall to the bottom and the bad float on the top.

### Cauliflowers.

Sow in "Chota Bursât" in boxes, which will furnish plants for ting out. In beds sow on the surface, tread, rake level, and cover with litter. In August plant out, eighteen inches apart.

Those that have stood the Winter should have liquid manure or plenty of water, or be mulched, which prevents evaporation and feeds them.

Early in July sowings should again be made and planted out as soon as large enough, in the same way as cabbage, in moist soil. The after cultivation is confined to weeding, stirring the soil, and giving copious waterings in dry weather.

When heads begin to appear shade from sun and rain by breaking down some of the large leaves so as to cover them; water in dry weather, forming basins round the stems.

In cutting out heads leave the stumps with three or four leaves; they will produce plenty of sprouts, which will be very useful for various purposes.







## Dandelion.

Sow in drills a foot apart about May, thin out to four inches and keep clear of weeds; or it may be grown along with potatoes and gathered at the same time.

*Dandelion Coffee* possesses all the flavour and exhilarating effects of real coffee without any of its deleterious ones. Being of a soporific nature, it produces a tendency to sleep instead of wakefulness, and may be safely used as a cheap and wholesome substitute, being equal in substance and flavour to the best Mocha. The roots should, when gathered, be washed and not pared as the outer brown rind contains the aromatic flavour resembling that of coffee; then cut up to the size of kidney beans and dry in the sun on boards. They will keep for years and may be roasted, when required, to the colour and crispness of coffee, ground, and rather a larger quantity used than would be of coffee. The infusion should further be boiled for a few minutes.

## Lettuce.

The first crop should be sown early in *March*, and a second in *August*, which is best for main Winter crop, when cabbage-lettuce, which requires no tying up, may be sown.

The beds should be dug a foot deep and lots of manure dug in and mixed. Sow the seed broadcast and rake and beat down with a spade. The soil should be kept moist till they are well up, and then either water them well or not at all, surface watering is very injurious; but if not watered they are apt to run to seed, which may be prevented by cutting out the leading bud and tying up.

The March sowings are not transplanted, therefore thin out the plants to nine inches when large enough, and plant out those taken up in other beds. The August crop may be sown in a box and planted out, which should be on ridges to throw off the water.

They may be blanched by tying up when they have enough leaves, or covering with a pot, and are benefited by occasional waterings with liquid manure.

The beds should not be too much overhung by trees.

*April*.—Tie up Winter lettuce to assist turning in.

## Maize.

Sow early in March or at the beginning of the "*Chota Bursât*," in rows between cabbage, peas, beans, &c., or broadcast in beds and borders. It will grow without any other help.

## Onions.

Sow seed in open weather in February or August in a warm corner in light soil, thinly and regularly. When about the thickness

of a goosequill, prepare some puddle, with a little soot mixed in it, of the consistence of thick cream; draw the plants and place them in this puddle, where they can remain till planted again where they are to grow permanently. By keeping the roots in puddle, if even for a few minutes before being planted again, they are saved the slightest check and will not require immediate watering when first transplanted.

In dry weather a soaking or two with strong liquid manure may be given. They may be watered while young, but not when they have begun growing in earnest. The decaying of the leaves is a sign of their maturing their bulbs.

### Peas

Do best in a rich light loam in which they should be sown in drills three inches deep and eighteen inches apart, and moderately thick, two or three to every inch or two.

Sowings may be made in January and beginning of Rains; germination may be hastened by soaking the peas for a day.

Another way is to dig a trench nine inches deep and fifteen inches wide, fill in six inches of good manure and the remainder with the excavated soil; on this sow the seed.

If the rows run north and south, cabbages, onions, &c., may be planted between them.

A good watering in dry weather is very beneficial, but it must be poured along the drills; also an occasional one with liquid manure.

Gather seed as soon as the haulm changes colour or the pods begin to dry.

*To preserve green peas for Winter use.*—Take peas when plenty, shell, wash, and scald them for a few minutes by pouring boiling water over them; then drain, put into bottles and cover with strong brine; over this put in a teaspoonful or so of good salad oil, cork tight, and secure the corks by dipping into bottle cement,—equal parts of resin, pitch, and boneblack melted together; keep the bottles upright.

### Potatoes

Require a deep, thoroughly-drained, light loamy soil. Either manure the previous season or use fertilizers; lime, carbon, potash (woodashes), and burnt earth. “A capital help to growing potatoes is a compost of three bushels of slaked lime, one bushel of salt, and ten of woodashes; some of which should be used round each plant.” Sunshine is essential to their well doing. (See “Sunflowers.”)

Autumn planting is beneficial to prevent disease by securing early well-ripened crops; when they appear they should be well earthed up to keep out the frost. The main crop should be sown early in January; medium-sized whole potatoes are better than large ones cut up.







An advantageous mode of raising potatoes is recommended as follows:—Dig the soil a foot or more in depth; then open a hole twelve inches in diameter and six inches deep, fill in good manure three inches deep; place thereon a whole potato (cut ones will not answer), cover with more manure and the excavated soil, which however, should not be pressed down. Such plants will yield from fifteen to twenty pounds of potatoes. If frost is feared, the young shoots should be covered with soil drawn up from around them.

When potatoes are cut up, it is best to expose the cut surface for a day or two to render it callous before planting.

“The sprouting of potatoes is complete destruction to them as seed, having exhausted themselves by growing before being planted; therefore, be satisfied with a short crop rather than sow such sets; they will surely fail.”

It is advisable to pick off the flowers, which will throw the strength of the plant into the tubers.

They should not be dug up till the haulms are quite decayed.

Potatoes may be preserved buried in *dry soil* in a dry shed to, keep the frost out; or by dipping baskets or net bags full of them into vessels of boiling water for a minute or two to destroy the germ; in this way several tons may be cured in a few hours; they should then be wiped and dried, and stored in a dry place, but should not be heaped up too high, and should be turned occasionally; or a cold dry cellar is perhaps the best place to store them in, which may be done without this preparation.

## Pumpkins.

(*Vegetable Marrow—Gourd—Squash.*)

Seed should be sown early in March, in deep rich loam, in borders or beds like cucumbers, when they will bear in August. The leading shoots should be pinched out as soon as they have a pair of leaves, but not after.

## Radish

May be sown during the Rains, both “chota” and regular, for succession; they require plenty of water to prevent their becoming pungent and woody.

## Tomato.

Sow early in March in light mould in small pots, and finally plant out as soon as large enough and frosts are over, the earlier the better, in rich light soil and a hot situation under the full influence of the sun. Water well with liquid manure till the blossom buds appear, when watering should cease; and the leaders stopped. Some of the leaves which shade the fruit should be removed in order to give them the full benefit of the sun. Water only when very dry, which will be

seen by the state of the tree. In case the fruit does not ripen even in Autumn, cut off the branches with full-grown fruit and hang up in a warm, dry place to soften and ripen. Tie up the plants to sticks or frame-works to keep the fruit off the ground.

### **Turnips.**

Sow early in March and June or July, in fact at any time immediately after rain, for the wet makes them germinate at once; tread or roll in well and rake level; sow either broadcast or in drills, with a good dressing of soot, ashes, lime, &c. Thin out to seven or eight inches every way. They come in very handy in Autumn and Winter. "A good sprinkling of ashes as soon as they come up, when the dew is on them, saves them from the turnip fly."

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## POULTRY YARD.

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"No man need ever have an ill-provisioned house, if there be but attached to it a dovecot, a warren and a fish-pond, wherein meat may be found as readily at hand as if stored in the larder."

### To choose Poultry.

Young *geese* have yellow bills, and red pliable feet; if bills are redish and legs stiff and dry, they are old.

*Ducks*.—Prefer those which have supple feet; and are hard and thick in the breast.

*Fowls*.—Choose cocks with short spurs; hens with smooth combs and legs.

*Turkeys*.—Select those with smooth legs and short spurs, feet supple and moist.

*To fatten Fowls quickly*.—Mix together some thick "*hheer*" (boiled milk and rice) with a little coarse sugar, and feed them on this in the day time, but not too plentifully.

*To improve the flesh of Fowls*.—They should be kept without food for twelve hours before being killed; their crops and intestines are thereby emptied, and the flesh rendered more juicy and the fat firmer; they should be killed some days before being dressed, but should be *drawn at once*, and hung up in a cool place with a few bits of charcoal inside. If not drawn immediately, the gas from the crop and intestines will taint the flesh, even if left in a short time only.

*To fatten Ducks and Geese*.—They should be kept close prisoners with a trough of water, but not let loose in a pond except for half an hour a day for a good bath, and fed upon bran and barley-meal (*suththoo*), or whole barley soaked. Celery adds a fine flavour to their flesh. In three weeks or a month they will be fat.

*Geese* fed on turnips cut up into dice, and put into a trough of water, will get exceedingly fat:—"Six geese weighing nine pounds each in three weeks weighed twenty pounds each, and one on being dressed yielded four pounds of oil."

*To preserve Eggs*.—Dip them in thin gum water and pack them, small end downwards, in charcoal dust. Select the freshest eggs for this purpose.

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## Fowls.

If you wish your fowls "to pay," a certain amount of attention is essential, otherwise you had better leave them alone; and in order to be successful, certain points should be strictly attended to:— (1) no more expense is to be incurred than is absolutely necessary; and (2) the productiveness of fowls must be stimulated and the utmost advantage taken of it.

The first thing then is to get the chickens hatched in March and April, so as to give them the whole season to grow and develop in; feed them well and induce them to begin laying as early as possible, at six months or so, and to lay all the Winter. Fatten and dispose of the surplus stock as soon as possible.

A house six feet square with a run of the same width and double that length is enough for a cock and half a dozen hens. Protect the house from cold wind, frost, and snow, but ventilation should not be neglected; an opening at the top which does not admit the wet is best. A good and durable roof may be secured by fitting planks closely together and giving a good coat of tar; over this lay sheets of stout brown paper, over which a couple of more coats of tar should be laid on—the smell of the tar keeps out vermin: the roof should slope from eight to six feet. Light too should be admitted by means of a window. The floor should be natural, well-drained, and dry soil. Twice a year the soil of the whole floor should be removed to the depth of two or three inches and replaced with fresh soil. The walls should be *lépó-ed* (plastered with thin cowdung and water), if they are not regularly plastered and white-washed. Place a row of wide-mouthed "ghurrahs" on their sides all round the house on the ground for laying places, and build them over with mud to prevent breakage. Perches may also be provided for them, but should not be more than sixteen or eighteen inches off the ground, as those placed higher are apt to cause lameness and other injuries to the fowls in flying down; those formed of rough poles with the bark on, answer best, the claws of the fowls grasp the bark more firmly than a smooth perch, but these perches are not absolutely necessary, as the raised earthwork over the ghurrahs answers for this purpose.

In the door cut a hole a foot square for the fowls to go in and out if they are to be allowed liberty, which they should occasionally; a sliding plank will secure them at night against the incursions of cats and foxes. Of course the large door will be kept locked and opened periodically to clean out the house and remove the eggs, which otherwise will be few and far between.

If an enclosed "run" is made for them, a fence three feet high will be enough for Cochins and Brahmas; for Game and other fowls, however, one eight or nine feet high will be necessary, and







the netting should not be fitted with rails at the top, which themselves tempt the fowls to fly on to them, but should simply be nailed to posts two inches square, five feet apart, and fixed two feet into the ground.

Dust and ashes should be provided in a sunken bed in a corner of the yard for them to roll in, for this rolling in dust is their *bathing* and essential to their welfare; this, with clover, which should be sown in their runs, will keep them healthy.

Proper feeding is most important—fat hens speedily cease to lay, while a cock becomes useless—overfeeding is the cause of numerous deaths and nearly all the diseases fowls are subject to; while on the other hand, if starved, a considerable falling off in the number of eggs will be apparent; a good feed of grain only is not sufficient for fowls kept in confinement; they should be fed twice a day and their meals should consist, the first one of soft food, which is easily provided by boiling the parings of potatoes and turnips, or cheap whole ones, till soft and mashing them up with enough bran to make up a dry, but not sticky, paste—so that if a lump is dropped on the floor it will break in pieces—a little salt, and in Winter a little pepper, added to the above, will keep the fowls in health and laying condition; they should not, however, get more than what they will eat eagerly at one meal. The second feed in the evening should be a full one of grain, which takes longer to digest and supports them through the night, while the soft food is sooner and more easily digested when most wanted in the morning. Feed them on all kinds of grain, and do not restrict them to any one kind—for Summer feeding, barley (11), wheat (12), gram (24), peas (25), are the best owing to the large percentage of flesh-forming material they contain, while for Winter, maize (65), millet (60), paddy (80), wheat (70), are preferable owing to their heat producing qualities, the percentages of which are given in figures.

Animal food is essential to their continuous laying; worms and grubs of all kinds are highly enjoyed by them, and it is a great thing if they can have access to the dung heap, which should be placed within easy reach of them if not otherwise inconvenient. If they are kept pent up and cannot get worms, they must be fed with meat; half an ounce each of fresh meat or boiled bullock's liver given daily, or curds two or three times a week, will ensure their laying perpetually: too much should not be given, or else it might stimulate too highly. Feeding generally on *soaked* grain increases their disposition to lay all the Winter. Green food must also be provided, and if the runs are not sown with grass or clover, some vegetables must be chopped and given to them; cabbage, lettuce, onion, and turnip leaves; the want of this is the cause of half the deaths which occur. Linseed meal mixed with their food and a few hemp seed occasionally improve their plumage and appearance. If they lay soft shell-less eggs, give them egg shells and lime rubbish.



A good supply of fresh clean water should always be provided.

Fowls often die off most unaccountably when kept shut up: this is owing to the want of grit and pebbles which they eat in large quantities to help the digestion of their food; if deprived of these they soon sicken and die after they have cleared the yard of all they can find, which is hastened by the sweeping out of their houses and yards. This of course should not be neglected, but fresh earth, or rather gritty soil, should be spread over the floor periodically, as well as a deodorizer as to supply the needful grit.

Although we need not resort to such cute Yankee dodges as getting the loan of eggs, hens, and cocks and returning them after they have hatched a sufficient number of chicks, yet doubtless a friend will gladly give a dozen eggs for the beginner to begin with, or what is better buy a cock and half a dozen hens of a good breed, young and healthy birds—*cochins* are excellent layers, and will lay all the Winter, but *brahmas* are better, smaller eaters, more prolific and lay almost all the year round, many *never stop!* Both these carry plenty of flesh, which, however, is not very superior. The chickens are hardy and easily reared. Failing these, try *ghagus* fowls, which, for the size of their eggs and the quantity of flesh they carry, are to be preferred to others; *game fowls* are hardy, eat little, and continue prolific for several years; their chickens are very robust, and their flesh far superior to that of any other kind.

If eggs only are desired, a cock may be dispensed with entirely, as the hens, if properly fed, lay better without one; but if the rearing of chickens is contemplated, the services of one are indispensable, or else the eggs will all be infertile. The hens selected should be healthy and young, certainly not over fourteen or fifteen months old.

In order to keep up a regular laying stock, it should be replaced by new every fourth or fifth year at the latest when they pass their prime; but perhaps replacing them every Autumn by stock hatched in Spring would be better, for directly they stop laying they may be killed off for the table, as by this time they are in splendid eating condition, and to keep and feed them much longer does not "pay;" the others hatched in Spring will begin laying about this time if well fed, and these in turn should make way in the succeeding Autumn for the next stock of Spring-hatched hens.

Only six or eight hens should be allowed to each cock to obtain robust chicks. Rear only the best fowls; those with any defect should be disposed of at once.

Eggs for setting are best kept in bran with the small ends downwards, and should never be exposed to concussion.

Mark the eggs in pencil with the date and keep them in a box of well-dried bran or sawdust and choose the freshest and best shaped for setting; the fresher the eggs the better, and not older than a month; these hatch stronger chicks than the stale ones: set not more than ten eggs under one hen, which is all she can conveniently





cover. Setting hens should be secured from the intrusion of laying hens, which disturbs them, besides often resulting in a mixing up of half-hatched and fresh eggs.

A good plan is to set two batches of eggs at the same time, and as soon as half the eggs are hatched, which they will be in twenty-one days, place all the chickens with one hen, giving all the eggs to the other to continue hatching.

If the weather is very dry, it will be necessary to damp the nest a little occasionally during the latter half of the setting period; this is absolutely necessary to ensure success, otherwise the moisture in the egg dries up, gets hard, and results in the death of the chick; and may best be done by either sprinkling a few drops of tepid water on the nest or placing damp grass or soil under it, or which is the best, the nest should be made on the bare ground.

The eggs should be set in the evening, for then the chicks will probably be hatched on the evening of the twenty-first day; and as they require no food for twenty-four hours after, but require warmth, they are best left under the hen till morning; by this plan also the hen is not tempted to go out when she first feels the chicks moving under her, which she is apt to do if they are hatched in the morning.

The best food for chicks for the first three or four days is the yolk of a hard-boiled egg with a few bread crumbs soaked in warm milk or water and squeezed dry, or cold oatmeal or soojee porridge—feed little and often; after which, till a month old, a slice of meat chopped fine should be given; this strengthens them very considerably: bread sopped in water is the worst possible food for chickens and causes diarrhœa. At four months old they are big enough for the table.

To prevent the desire of a hen to sit, place her under a box raised on four bricks giving plenty of water to drink but comparatively less food; in four or five days she will probably get over the inclination and in a fortnight will begin to lay again. Dipping them in cold water is useless cruelty.

If and when their houses got infested with lice, clean and sweep them thoroughly, and sprinkle well with kerosine oil diluted with three times its quantity of water.

Fowls should not be kept in the same house with pigeons, or else the cruelty practised by them on the young squabs and squeakers will be heart-rending, besides being objectionable in other respects.

It need hardly be mentioned that fowls are very destructive in nursery-beds and gardens, and should be rigidly excluded; particularly hens with chickens.

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## Pigeons

Are extremely easy to keep, as rearing them gives no trouble whatever; they increase very rapidly, five or six or more pairs of young may be calculated upon from each pair of adult birds. All that we have to see to is that they have plenty to eat and drink.

A *khonw*, or well with holes all round, is the best place for them; the mouth of the well should be narrower than the bottom, to admit of covering up in wet weather or at nights if it is not deep enough to be secure without this. The next best place is a spare loft, or pent, one or both ends of which should be wired to give ventilation and light; but protection must be afforded against snow and cutting winds in Winter. Or failing these, a house should be built specially for them, in a sheltered but sunny spot, say ten feet broad, sixteen or eighteen long, and ten high at the top of the pent roof, with the back against the north; the front should be secured with wire-netting, bars, or trellis-work, and should also, if possible, be the whole length of the house. On the sides build up "chatties" with wide mouths, but beginning as much above the ground as possible, the mouths of the chatties should face the opposite walls, because breeding pigeons, like wicked men, love darkness rather than light; be particular to provide also *double* the number of chatties to the pairs of pigeons kept, and every couple of chatties should be connected by a ledge, because pigeons of a prolific breed, well fed and in good health, almost invariably lay a second pair of eggs *before* the first pair of young shift for themselves. If this is not done, owners will not benefit to the fullest extent by the productiveness of pigeons, and the produce will, of course, be less. Fill the chatties to a level with the lower part of the mouth with fresh ashes, which will prevent the too rapid increase of lice, and provide straw cut to six or eight inches which the pigeons will use to build their nests. The whole interior should be fitted up with cornices, shelves, brackets, and sitting places; perches and rods may also be fitted up in convenient corners.

The older a cock pigeon grows, the more paternal does he become, so rather keep the old birds than get together new stock frequently. Give the preference to Runts and Trumpeters, or *Goluhs*, and *Sirajees*, or large breeds of pigeons, as being more economical than the smaller kinds. They are very prolific and excellent nurses, and fatten well for the table. Start with those a year old.

As soon as it is observed that the greater number of birds have laid eggs and some have hatched young ones, they may be allowed a little liberty, but this is not always necessary if they have plenty of room to fly about in. Their attachment to their eggs and young will prevent desertions; after the second laying, the old birds will give up all thoughts of deserting.







At the end of eighteen days from the laying of the second egg, a young one will appear, and shortly after the other one; a little pigeon grows enormously during the first twelve hours, during the next week still more rapidly, and proportionately so after that. If not something is wrong, "the squab that remains stationary is sure to die." The average weight of a pigeon's egg is about half an ounce; a week after hatching the increase is from half an ounce to four and-a-half ounces, in another week ten ounces, in another twelve ounces, which is about the limit of their weight; and in another week or ten days, the young pigeons should begin to fly about and feed themselves. It is often the case that squabs of a fortnight old are deserted by their parents, these may be reared by using a small bag filled with soaked grain, a button-hole being opened in the bottom of it to admit the beak; a little working about of the grain will soon teach the "youngster" what is required of him, after which he will look out for his bag as eagerly as a baby for its bottle; this is better than turning foster parent and rearing them by *mouth*.

"Squabs" are young pigeons before they leave the nest; "squeakers" when they first leave it and begin to flutter about. They are almost invariably hatched in pairs, a male and female, any preponderance of sex is due rather to accident or disease than otherwise.

As soon as they are old enough to feed and fly, it is time to eat them, if they are not to be kept: to feed them any longer is useless expense.

Of course, it is all important that pigeons should not only be regularly fed every day, but when they have young ones, which is sure to be almost always the case, an extra quantity of food should be given; for after feeding their young, the adult birds will have to feed themselves; a great point also is to give a mixture of grains of *all* kinds, not excluding seeds of weeds, a good deal of which is found in the *koothee* or winnowings of food grains and sold very cheaply in markets. "Salteats" must also be provided for pigeons; they are made by mixing a barrowful of good loam reduced to the consistency of pap with brine in which meat has been pickled, to which are added one and a half gallons of coarse sand, a peck of salt, and a little saltpetre. Also a "pigeon's salt-cellar," or pan of any coarse granulated salt set down on the floor.

Pigeons are thirsty creatures and great bathers; provide also, therefore, a broad but shallow pan, which should be filled every day with fresh water, and occasionally with lime water to destroy lice on them; it won't do them harm if they drink it, rather the other way: it should be placed in a sunny corner, where they will enjoy their baths and basking in the sunshine.

*Lime-water.*—Into a bucket of water throw a pound of new unslaked lime, let it stand for an hour after a good stirring up, and pour off the clear liquid.

Dovecots are sometimes infested with lice, which give great annoyance to the old birds and even destroy the young; this is due to want of cleanliness, allowing the dung to lie unremoved too long, &c.; clear out and burn all the nests, and thoroughly sweep and then whitewash the whole house, inside and out, nesting places and all. Sprinkle the birds and young ones with snuff, which will destroy the lice. These lice are a peculiar species and do not affix themselves to the human skin; there is, therefore, nothing to apprehend in the cleaning out, although the task might be a very unpleasant one.

Sick pigeons are difficult to cure; get rid of them at once.

Young pigeons for the table should be killed just about the time they are a month old, just as they leave the nest. To fatten and have first-rate pigeons the following plan should be adopted:—take the squabs of eighteen or twenty days old, when their feathers are just beginning to sprout, and place them in a nest in another room, under a basket to exclude the light but not air; feed them early in the morning and in the evening with from 50 to 80 or 100 grains each time, of maize steeped for at least twenty-four hours in water. Continue this for ten or fifteen days, and you will have the fattest possible pigeons.

In the pigeonhouse, provide also a couple of rat-traps of a kind which will enable a number to be caught at the same time, cage-traps or two-hole mouse traps on a large scale; these should be baited and looked to every day, at feeding time is most convenient.

### Pigeon Law.

The Indian law differs from the English and French, inasmuch as a pigeon becomes the property of the person to whose dovecot it comes *in any way*, or to the person who catches it, provided the catching does not amount to theft; pigeon fighting, luring and catching, are common practices, and although the pigeons caught are sometimes given up to the original owners, it is rather as a matter of favor than of right.

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## Rabbits

May be kept in almost any sort of box, but proper hutches can very easily be knocked up with a box, a few nails, and a little ingenuity. They should provide a space of not less than a yard square for each adult rabbit and be on legs to keep them off the damp ground. Larger ones should be provided for the young rabbits; one for those below three months old, another for those above that age. When rabbits are kept in large numbers, the hutches should be kept in an outhouse, courtyard, or enclosure, which is at the same time airy, sunny, sheltered, and secure. The hutches and houses should be kept scrupulously clean; if they are allowed to reek with filth and unpleasant odours, they will prove fertile sources of disease. Rabbits are naturally of a robust constitution, but when they do ail, the evil is of serious consequence. Dryness is essential to their well-being, and they should, therefore, be kept carefully from drippings, and damp and wet from any source.

The great objection usually raised to rabbits is the smell emitted from their hutches; it may be worth knowing that their urine is the sole cause of the bad smell; provide plenty of dry earth under their hutches, which should be removed as soon as any smell is given out from it.

Although one buck is sufficient for thirty does, a buck and six does are a good breeding stock to begin with; and each breeding doe should be provided with a hutch, with two compartments, to herself, in preference to a number being allowed to herd together, which is objectionable for many reasons.

To keep rabbits in this state of isolation is the main principle of rabbit-keeping, else the buck will greatly harass the doe and often kill the young ones.

Rabbits live from six to eight years, but a buck is in his prime from one to five years, and the does from eight months to five years. A healthy doe should bring forth not less than eight, but six ought to satisfy anybody. They should not be put to the buck till they are eight months old; if this is done earlier, they become liable to abortion, and are always weakly and bring forth weak or defective young ones. In selecting does to breed with select those dropped in March; these will be ready to go to the buck in November, and their first produce will be fit for use by the end of the Winter. They will breed through the Winter and continue prolific for five or six years, after which it is better to fatten them for the table.

The doe goes with young thirty days; she should be put to the buck in the evening and returned to her own hutch in the morning. Although she is ready to revisit the buck a fortnight after littering, it is perhaps better to let her have a fortnight's rest. To keep the

stock in proper breeding trim, not more than six litters should be calculated on in the year.

The owner will know by his notes the day on which each doe will bring forth; a week before the hutch should be thoroughly cleaned, and good, clean, dry, sweet straw put in for bedding; with this and the fur she will tear from her own breast, she will make a nest for her young. She should be kept quiet and regularly fed: any neglect at this time may prove disastrous—checking her milk and causing the death of the young.

Take care not to touch the young ones for at least twelve or fifteen days after birth; any handling or even opening of the hutch may cause the mother to kill them all off. If dampness is feared, they may be moved to a dry corner, but the whole nest, if dry, should be moved bodily. If the doe eats her young a second time, fatten and kill her for the table at once.

The little rabbits are born blind, but on the fifth day they open their eyes; at a month old they will begin eating; to encourage which they may, when twenty-five days old, be turned out of their nests into the outer compartment, if they are not out by this time themselves. After their first walk round, they will not perhaps require a second turning out, but will come out of their own accord.

At a month old, when they eat well, they should be removed from their mother, or else they will exhaust her; keep those younger than three months in separate hutches or divisions of the yard or house, where they should be fed abundantly, but at each feeding, all uneaten refuse should be removed and fresh food given every day. At four months old they may be put along with their elders, taking the precaution to cut the males before so doing. At six months old, good strong does may be selected for breeding purposes, and they should be secluded till the proper time to visit their lords; the entire males should be secluded at five months old.

The castration of the males is done by two persons—one to hold the rabbit the other to perform the operation; which is done by seizing the testicle with the forefinger and thumb of the left hand, dividing the skin lengthwise with a sharp knife, squeezing out the oval body, and finally drawing it out altogether; the like is performed on the other side; a little fresh hog's lard applied to the wounds will soon cure them. It increases their size and fatness and greatly improves their flesh; that of the does is superior to that of the bucks, but that of the castrated bucks is superior to that of the does; besides this, buck rabbits are most mischievous and quarrelsome animals and fight deadly battles, emasculation renders them as harmless as does.

The best feeding times are early in the morning and about sunset in the evening, and they should not be fed oftener; a good feed twice a day is better than feeding less all day. "Rabbits are, like







fowls and pigs, a save-all, a transmuter of all sorts of scraps and useless refuse into valuable fur and flesh, and what is there that a rabbit will not eat?—trimmings of trees, prunings, clippings, and weeds of nearly all kinds are too much neglected as rabbit food; the young and tender shoots of everything, except geraniums, are highly enjoyed by them; and where there is a small garden, the expense of feeding them, with a little extraneous aid in Winter, is almost nil.

In wet and damp weather, the green diet should give way to a dry one; in Summer give them their fill of green food with soaked gram once a day, particularly breeding does; this is the only way to have strong and healthy young ones. Abundant food (fresh not stale) is the main thing and a variety a great thing. If rabbits die the chances are ninety nine to one that damp or starvation is the cause. For Winter use it is best to lay in a store of potatoes, Jerusalem artichokes, turnips, haulms of peas, beans, bran, gram, &c. Feed the does well, particularly when they have young ones.

It is a mistake to think that rabbits do not drink water; it is as essential to them as to anything else. Does with young need it more than the others, although feeding on green vegetables decreases the want of it.

The flavour of the flesh of rabbits may be improved by feeding them a few days before being killed on aromatic herbs, which also keeps them in health; a small bed of these should be specially grown for them. In killing them for the table they should be cut like fowls, by which means the blood is drawn away and the flesh rendered white; the ordinary mode of killing by a blow behind the ear is objectionable as causing a coagulation of the blood.

The flesh is not particularly nutritious, but is light and agreeable; and the convenience of having a plump rabbit at hand when friends drop unexpectedly in to dinner, cannot be over estimated, besides which a fine rabbit of one's own rearing and fattening is not to be despised.

Like all diseases, those of rabbits are more easily prevented than cured. The loss of a whole litter, or perhaps an entire stock, will often be the result of carelessness or want of judgment. Young ones are liable to a sort of ophthalmia caused by the exhalations from putrefying filth, which is the result of want of cleanliness and bad drainage; the remedy is, of course, a thorough cleaning out and a temporary removal elsewhere.

Rot, or liver disease, and pot-belly, or dropsy, are due the first to feeding on putrid or fermenting greens, and the latter to over-feeding on green food. The former is fatal, and the latter hardly worth treating. The wisest way to prevent further mischief is to sacrifice every animal so attacked; incipient cases might be treated by putting the afflicted at once on a dry diet; feeding them on oat, pea, and barley-meal, green broom and well toasted bread,

with oak leaves and young shoots, also aromatic plants, is excellent and keeps them in health.

In handling them, they should be held by the ears by the right hand, the left supporting the hind quarters, the rabbit being turned on his back. To hold them otherwise is likely to hurt or injure them. Does with young should be treated with the utmost tenderness.







## RECIPES.

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### Sunburn to remove, and whiten the skin.

1. Cut up into slices, and melt a cake of brown Windsor soap over a slow fire; when melted, remove and pour in a tablespoonful of Eau-de-Cologne and the same of lemon-juice; mix well and pour into a mould, and use when hard.

2. Put borax fifteen grains, lemon-juice one ounce, and sugar-candy half drachm. into a pint of water, and let them stand till dissolved. Apply with a sponge twice or thrice daily.

### Soft soap.

Mix ten pounds of potash in ten gallons of hotwater overnight; in the morning boil it, add six pounds of grease, and put into a barrel, adding fifteen gallons more of warm water.

### Elastic Waterproof paint for canvas.

Hotwater half a gallon, soap two pounds; dissolve, and add three gallons boiled oil and turpentine one gallon. Mix well and grind, or mix your colors in it.

### Waterproofing for Linen or Cloth for Sheds.

Boiled oil twenty-five parts, wax two parts, litharge two parts, lampblack two parts; mix and use at discretion. Any other colour may be used instead of lampblack.

### Tar varnish for props and supports.

Tar two gallons, tallow one pound; melt, and add ground ochre seven pounds, spirits of turpentine six pounds; mix well. By regulating the ochre, an excellent chocolate paint for rough outdoor work will be obtained.

### Rough paint.

For coarse outdoor work, may be made by grinding finely powdered charcoal in boiled oil till of the consistency of paint; two or three coats should be put on. It is well adapted for waterspouts, casks, &c.

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*August, 1880.*

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